

STEM Scholars Explore STEM Careers Through Summer Field Site/Workplace Experiences

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

Calhoun
Franklin
Gadsden
Gulf
Holmes
Jackson
Jefferson
Liberty
Madison
Taylor
Wakulla
Walton
Washington



Heartland Educational Consortium

Tom Conner, Executive Director

DeSoto
Glades
Hardee
Hendry
Highlands
Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

Columbia
Flagler
Gilchrist
Lafayette
Levy
P.K. Yonge
Putnam
Union

Through the *FloridaLearns STEM Scholars* Project's Talent Development Program, talented and gifted high school juniors and seniors from small and rural districts across Florida are participating in Field Site/Workplace Experiences this summer. These experiences are made possible through partnerships with leaders in STEM industries, such as local businesses, agencies, the military, and higher education faculty. The experiences offered by these STEM Talent Developers are preparing STEM Scholars to become STEM-ready by demonstrating the value of a career in STEM areas through real world interactions with STEM-related employers.

In the PAEC area, fifty-five STEM Scholars and seventeen teacher leaders have participated this summer in a variety of experiences, including job shadowing, workplace tours, career coaching, and internships. They have conducted field and worksite tasks alongside scientists, engineers, and other STEM professionals at eleven sites. By doing this, they have received first-hand knowledge and experience with STEM career opportunities in their communities that will help them make informed career choices, and create a framework to increase the likelihood of their success in post-secondary STEM curricula or the workplace.

One of the providers for a STEM field experience was Oglesby Plants International, an ornamental plant industry located in Altha, Florida, since the 1980's when the company relocated from Homestead, Florida. Oglesby has been a leading supplier of high quality young plants for commercial growers since 1947. In the early 1970's, their laboratory began using a process called plant tissue culture propagation, and since 1975 they have been a leader in this global industry. Every year they produce millions of identical copies of plants using this process, and their laboratory staff has received international recognition for their ability to consistently deliver quality products.

Three STEM Scholars from Calhoun County had the exceptional opportunity to spend eight days in July working with Oglesby's experienced laboratory staff in the tissue culture lab and its associated greenhouses. They participated in ornamental plant tissue culture medium preparation, culture multiplication under sterile conditions, and planting micro plants into "soil." They worked with some of the breeding projects in the research greenhouses, and with consolidating, planting, and growing plants in the nursery greenhouses.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union



STEM Scholars Shelby Murphy, Brooke Coleman, and April Rich take turns carefully following the formula for preparing the solutions that will be used to disinfect the Venus Flytrap plant tissue they will be placing into culture.



Brooke Coleman uses a sterilized scalpel and forceps to trim the disinfected plant tissue that will be placed in test tubes to begin the multiplication process.



Laboratory Director Ray Gillis emphasizes the importance of working in sterile conditions and demonstrates an important step in the micro propagation tissue culture process.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union

In addition to experiencing the science involved in this industry, the students were able to learn about the impact this local business has on their community and the world. Oglesby Laboratory Director Ray Gillis explained, “With about 100 employees, we have an impact on this small rural county, and we ship primarily to Central and South Florida; however we also ship to Hawaii, Europe and Australia. This experience has helped students to gain understanding of how a local business can have an international impact.”



STEM Scholar April Rich examines test tubes of plant tissue that had been explanted two months earlier. The students were able to see how their plant tissue will look farther along in the propagation process, and learned about the possible impact of their work experience in the lab. Laboratory Director Ray Gillis explained, “After we multiply them up and screen them for bacteria and fungus, they’ll be used in our production department. What you’re doing today could potentially make 10, 20, or 30,000 plants for us!”

When the students were asked about their field site experiences at Oglesby, April Rich, a rising senior at Blountstown High School, stated, “It has been interesting just to see what actually goes on here at Oglesby. I’ve lived in Calhoun County all my life and never really knew what went on here. I just think it’s really cool to see how much happens here, and what all goes into propagating plants.” Brooke Coleman, who will be a senior at Altha School this coming year, appreciated the opportunity to actually work in the labs and greenhouses. She said, “I mostly enjoyed the hands-on part of this program. I thought we’d be observing a lot, but we’ve done a lot. I’ve really learned a lot.”

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

Calhoun
Franklin
Gadsden
Gulf
Holmes
Jackson
Jefferson
Liberty
Madison
Taylor
Wakulla
Walton
Washington



Heartland Educational Consortium

Tom Conner, Executive Director

DeSoto
Glades
Hardee
Hendry
Highlands
Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

Columbia
Flagler
Gilchrist
Lafayette
Levy
P.K. Yonge
Putnam
Union

Sara Waldorff, STEM mentor teacher, media specialist, and teacher of gifted students at Altha School participated with her students during their workplace experience at Oglesby. She commented about the value of working in a real scientific laboratory. “It has amazed me to see the precautions and procedures they have in place, and the checks behind their procedures. They don’t just assume things. I have also appreciated that they’ve all taken the time to stop and explain the scientific principles behind what we’re doing. It’s not just going through the procedures. They actually explain what is going on.” The STEM scholars and their mentor teacher agreed that it had been a very valuable experience.

Sixteen other STEM Talent Development Partners across the consortia provided field site or workplace experiences for STEM Scholars this summer. The experiences lasted eight days, and a STEM teacher leader, from each district represented by students, accompanied each group of scholars. The Florida Department of Environmental Protection’s Apalachicola River Estuarine Research Reserve in Eastpoint, Florida, hosted four students from Franklin County. They enjoyed activities in the Reserve’s research, stewardship and education sections. These included sea turtle nest monitoring, vegetation monitoring, and a teacher training workshop.

Buckeye Technologies, Inc. /Georgia Pacific in Perry, Florida, hosted six students from Taylor County. Among their experiences was a comprehensive tour of the site; meetings with engineers from a variety of disciplines to learn how projects are developed, funded, and installed; visiting modules to see different projects and meet module owners; meeting with environmental managers and learning about Buckeye’s environmental commitment; shadowing process development managers and module process managers, and meeting with the site leadership team to process and evaluate what they learned.

The Center for Viticultural Sciences and Small Fruit in the College of Engineering Sciences, Technology and Agriculture at Florida A & M University offered opportunities for four students from Jefferson County to work with scientists in their Biotechnology Lab, Viticulture and Product Development Lab, Genetics Lab, and Small Fruit Lab. Their experiences included an overview of the Viticulture and Small Fruit Program and field/vineyard and greenhouse experiences. Students there learned how to extract DNA, distinguish male and female plants and/or flowers, and how to systematically cross-pollinate flowers.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

Calhoun
Franklin
Gadsden
Gulf
Holmes
Jackson
Jefferson
Liberty
Madison
Taylor
Wakulla
Walton
Washington



Heartland Educational Consortium

Tom Conner, Executive Director

DeSoto
Glades
Hardee
Hendry
Highlands
Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

Columbia
Flagler
Gilchrist
Lafayette
Levy
P.K. Yonge
Putnam
Union

Nine STEM Scholars from Walton County were involved in activities at the Choctawhatchee Basin Alliance of Northwest Florida State College in Santa Rosa Beach. These included monitoring water quality, sea grass, and oyster reefs. They also were involved in restoration activities, such as the construction of oyster reefs through bagging shells and the deployment of oyster bags.



Jordan Sparks, Freeport High School student, is shown testing the water quality of Western Lake in Grayton Beach State Park during his STEM field experience with the Choctawhatchee Basin Alliance.

The E.O. Wilson Biophilia Center near Freeport, Florida was the field site for two other Walton County STEM scholars. There students worked directly with Environmental Instructor/Wildlife Biologist Bob Walker, better known as “Turtle Bob,” helping create a natural habitat for gopher tortoises in a 2-acre pen. They learned about the importance of prescribed burns, and assisted with clearing invasive species, removing debris, and planting more native species. Possible tortoise relocation sites were visited, and they were taught about weighing, measuring, marking, and tracking tortoises.

Three STEM Scholars from Jackson County worked at the Florida Caverns State Park in Marianna, Florida, on a project that involved the removal of algae that had formed on the roof of the park’s tour cave as a result of photosynthesis from the installation of lights in the cave. The areas of focus for the cave cleanup were divided into three zones. Each area was monitored to determine the amount of impact, the algae were removed, and photo-monitoring was used to compare the results.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union

The Florida Department of Transportation's District 3 Office in Chipley was the field site for twelve STEM Scholars from Washington, Holmes and Calhoun counties. Their workplace experience allowed them to explore the various aspects of civil engineering performed at the District offices and transportation systems in Northwest Florida. They were exposed to the engineering skills performed in the workplace and became aware of the science, mathematics and technology involved in Design, Planning and Environmental Management, Surveying, Traffic Operations, Materials Laboratory Testing, and Safety.

The Suwannee River Water Management District in Live Oak, Florida, provided a workplace experience for two STEM Scholars from Madison and Gilchrist Counties. Students began their experience learning about the history of the Water Management Districts, completing a safety orientation, being introduced to GIS Mapping and Geonavigation, and working on permits with the Water Resources Division Engineers. The following days the scholars were in the field, using their new GIS Mapping and Geonavigation skills and getting real hands-on experiences with district personnel. Activities included inspecting storm water structures and wetland restorations, observing timber harvesting and forestry management, and using scientific instrumentation to measure water quality parameters, and calculating minimum flows and levels of springs, streams, and rivers. They also inspected agricultural best management practices on local farms, monitored groundwater wells, and participated in many other activities.

Three STEM Scholars from Gulf County were exposed to various areas at Tyndall Air Force Base during their workplace experience that utilized Science, Technology, Engineering, and Mathematics skills. They saw a wide range of possible areas within STEM fields that are available through service in or employment with the U.S. Air Force. Included in these were civil engineering, expeditionary training, reactive material, geopolymer, bio duel cells, alternative energy laboratories, robotics, and aircraft operating surfaces.

The UF/IFAS North Florida Research and Education Center in Quincy, Florida, hosted three groups of STEM Scholars from Gadsden and Liberty counties. During their work experience, each group became an expert in the area of plant diseases, soils, or wildlife conservation, and produced a video about their expertise that will be shown to high school students in the fall semester when the Ag Adventure Program will be extended for an additional day to include 9th graders. The STEM Scholars who participated in this work experience received special training from the UF faculty, and will serve as the experts and act as teachers by making presentations to the younger students.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union

The *FloridaLearns STEM Scholars* Project is funded through the Florida Department of Education's Race to the Top award and involves a partnership among Florida's three educational consortia, which provide critical educational support services to Florida's small and rural school districts. The consortia are Panhandle Area Educational Consortium in northwest Florida, Heartland Educational Consortium in south central Florida, and North East Florida Educational Consortium in the northeast part of the state. The project is focused on serving gifted and talented students in grades 9 – 12 who reside in the small and rural school districts served by PAEC, HEC, and NEFEC. The Project affords increased access to rigorous STEM courses, provides collaborative problem-solving experiences, and ensures that students are well informed about STEM career options.

The Summer STEM Field Site/Workplace Experiences have allowed STEM Scholars to learn about STEM-related careers in their communities through personal experiences with STEM Talent Development Partners. This has been a valuable experience for participants, and has contributed to the development of a highly skilled and educated STEM workforce that will be prepared to meet the demands of Florida's future economy.

FloridaLearns STEM Scholars
STEM Brief
August 2013

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union

STEM Scholars enjoyed a wide variety of experiences this summer.



Madison County High School STEM Scholars learned about GIS mapping and Geonavigation skills while getting real hands-on experiences with the Suwannee River Water Management District in Live Oak, Florida.



Gulf County students Cordale Green, Samantha Hoover, and Allen Davis use Solid Works, a 3D drafting software as they design, build, and test a roll cage to protect cargo in a remotely controlled car while on site at Tyndall Air Force Base.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union



STEM Scholars from Washington, Holmes, and Calhoun counties participate in a hands-on activity to determine possible traffic impacts of various businesses moving in an area after a lane addition project by the Florida Department of Transportation.



Caitlin Hogue, STEM Scholar from Vernon High School, works with the District 3 Florida Department of Transportation surveying and mapping team.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



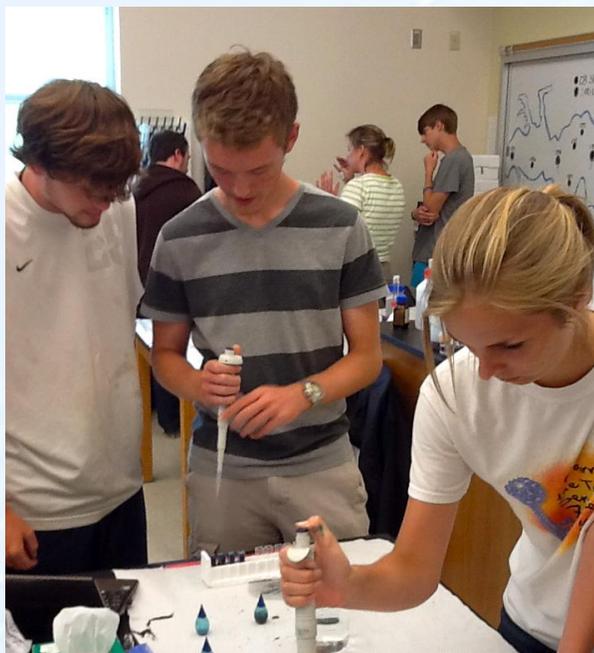
North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union



STEM Scholars from Walton High School and Freeport High School in Walton County participate in oyster reef monitoring during their workplace experience with the Choctawhatchee Basin Alliance at Santa Rosa Beach.



STEM Scholars Stone Thompson and Jacob Ray from Walton High School, and Ashley Archer from Freeport High School, are getting hands-on practice with pipets and a spectrophotometer, as they use food coloring to establish standards that can be used when evaluating water color and clarity. The STEM Scholars worked alongside instructors and graduate students from Mississippi State University, in addition to EPA officials who were there monitoring water within Choctawhatchee Bay.

Participating School Districts



Panhandle Area Educational Consortium

Patrick L. McDaniel, Executive Director

- Calhoun
- Franklin
- Gadsden
- Gulf
- Holmes
- Jackson
- Jefferson
- Liberty
- Madison
- Taylor
- Wakulla
- Walton
- Washington



Heartland Educational Consortium

Tom Conner, Executive Director

- DeSoto
- Glades
- Hardee
- Hendry
- Highlands
- Okeechobee



North East Florida Educational Consortium

James Surrency, Ph.D., Executive Director

- Columbia
- Flagler
- Gilchrist
- Lafayette
- Levy
- P.K. Yonge
- Putnam
- Union



Oglesby breeder and new product developer Marian Osiecki shows Brooke Coleman and Shelby Murphy, STEM Scholars from Altha School, how to cross-pollinate different orchids in order to achieve a new and improved product.



Blountstown High School STEM Scholar April Rich examines one of the orchids being pollinated.