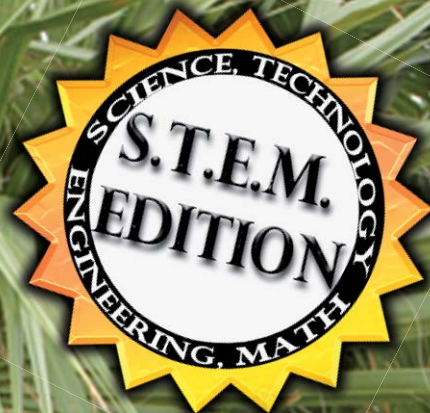


# PALMETTO CASILE

Spring 2014 Volume 6/Issue 2





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Cover photo by Sara Corbett  
Elementary school students from Porter Gaud examine a model rice trunk and learn more about the District's regulatory program.

Back photo by Sara Corbett  
Porter Gaud middle school students watch construction on Folly Beach while learning about the project.

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# From the Commander

Greetings Colleagues and Partners,

Welcome to our special edition of the Palmetto Castle focused on science, technology, engineering and mathematics (STEM). It is now spring time in Charleston and with the warmer weather comes many spring time rituals, such as vacations and graduations. Graduation, whether from kindergarten or college, marks a very special milestone. The education we provide our children covers a variety of subjects but some of the most important ones to our nation's future are science, technology, engineering and mathematics.

The current trend shows that the U.S. is falling behind other countries in STEM fields which will impact our ability to remain competitive economically and maintain our national security. STEM jobs are projected to make up only five percent of all US jobs by 2018 which is not nearly enough. Our nation's education system will need to produce an additional one million STEM graduates in order to meet the projected 2.4 million STEM job requirements by 2018. It is incredibly important to communicate the importance of STEM to our children in order for the U.S. to remain competitive.

The Charleston District recognizes its capability to promote interest in STEM and is committed to helping "plant the seeds" (see page 4) in order to develop a desire to pursue STEM fields of study in the students of our community. I am pleased to share with you this special edition of the Palmetto Castle dedicated to the activities the District has participated in the past few months to promote awareness, retention and an overall interest in STEM.

We have leveraged our resources and support by joining forces with two of our cost-share sponsors, the City of Folly Beach and the South Carolina State Ports Authority, highlighting current District projects to make a real impact on area students by showing them first-hand how the Corps creates real solutions to community problems (see pages 6, 8 and 14). The Chief of Engineers, Lt. Gen. Thomas Bostick, the Corps' biggest proponent of STEM, even took time out of his busy schedule to inspire a local student (see page 8). I had the privilege of hosting one of Clemson University's cadets, as he took a closer look at the world of engineering by spending some time shadowing me and learning about our projects (see page 16). Charleston District



personnel visited Timberland High School to talk about professions in the construction field, and the students later spent a morning at the District's St. Stephen Powerhouse and fish passage facility, which passes more than 750,000 fish each year (see page 10). There were many more events that you can look forward to reading about in this issue.

As you can see, the District has had a lot of fun getting students excited about the impact they can make with a STEM foundation and showing them real life examples of what can be done with a background in science, technology, engineering and mathematics. It may only take reading this issue of the Palmetto Castle to spark the interest in a young reader to pursue a career STEM-based career.

If you have a student in your life, please pass this issue on. Happy Reading!

A handwritten signature in black ink, appearing to read "J. T. Litz".

John T. Litz  
Lt. Col., U.S. Army  
Commander and District Engineer  
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Science  
Technology  
Engineering  
Math

## Middle School

In middle school, students build on their STEM knowledge to begin to answer more complex questions and create solutions for real problems. Teachers aid students by providing activities and projects that allow the students to learn about research and integrate their knowledge into real-life application. This is also the age where many students begin to participate in clubs and groups aimed at STEM topics.

In 2011,

**32%**

of eighth grade students performed at or above the proficient level in science.

In 2007, about

**1/3**

of public middle school science teachers either did not major in the subject in college and/or were not certified to teach it.

In 2013,

**35%**

of eighth grade students, performed at or above the proficient level in mathematics.

## High School

In high school, students are getting deep into their studies of STEM subjects and are becoming proficient in their real-world application. By now, students can apply their knowledge into their work and become more independent in their studies, with the help of mentors. Upon graduation, students have the sufficient knowledge base to pursue a college education, majoring in a STEM degree.

Only

**26%**

of American high school seniors are proficient in math and interested in a STEM career.

**44%**

of 2013 U.S. high school graduates are ready for college-level math.

**36%**

of 2013 U.S. high school students are ready for college-level science.



By Sean McBride

A stem is what connects the life-producing roots to a beautiful flower for people to gaze upon in a field and smell its wonderful aroma. STEM is the education initiative of growing the roots of students in science, technology, engineering and math until they produce incredible work for our country in those fields.

STEM education in students is imperative to the future of the U.S. Due to a decrease in students pursuing careers in STEM fields, President Barack Obama has set a priority of increasing the number of students and teachers who are proficient in these fields.

"Leadership tomorrow depends on how we educate our students today- especially in science, technology, engineering and math," said President Obama in 2010.

President Obama set goals to develop, recruit and retain 100,000 excellent STEM teachers by 2020, and to graduate an additional one million students with STEM majors in our colleges. This is because STEM jobs tend to be the fastest-growing in today's workforce. President Obama's proposed fiscal year 2015 budget includes \$170 million to train the next generation of STEM innovators.

## College

By 2018,

92%

of traditional STEM jobs will be for those with at least some post-secondary education and training.

Even those who pursue a STEM degree in college, approximately only

1/2

work in a related career.

The number of science and engineering bachelor's degree completions has grown by

19% from 2009 to 2013, compared to 9% growth for non-S&E disciplines.

In college, students are choosing majors in STEM fields. Students are conducting in-depth research projects to learn more about these fields and are receiving hands-on training through internships with local companies and apprenticeships with their professors. These STEM professionals are passing their knowledge of their fields to the students who will carry the torch in the future. College students are able to apply the skills and knowledge they have obtained over the years about the STEM fields to position themselves for a job after graduation.

38%

of students do not graduate with a STEM major &

of students who start with a STEM major do not graduate with one.

19.5%

of AP test takers in the class of 2012 earned a qualifying score on an AP exam.

Students who progress through at least **Algebra II** in high school are **twice** as likely as those who do not to complete a four-year degree.

Statistics from the Department of Education and the National Math and Science Initiative



# STORMING

## Through Folly Beach



Photos and article by Sara Corbett

As students walked up to the pipes spewing sand and water and bulldozers pushing sand up the dunes, there are audible “oohhhs and aahhhss” from the crowd with the rustling of bags and pockets in search of a cell phone to snap a quick photo.

The Charleston District hosted three different schools, James Island Christian School (JICS), The Porter Gaud School (PG) and Charleston Charter School of Math and Science (CC-SMS) at Folly Beach to learn more about the Corps and the Folly Beach Shore Protection Project.



**PORTERGAUD**  
**CYCLONES**



Palmetto Castle

While CCSMS visited the project in February, PG came in March and finally JICS in May, all the groups left with a better understanding of all the components that go into a shore protection project and how it reduces the risk of damage to the beach and structures along the beach from erosion.

Students were divided into two groups and rotated through three stations; the beach, turtles and Geographic Information Systems.

On the beach the students learned about constructing the project, how much sand is needed, finding the borrow area and keeping the project on schedule and within budget.

“During our experience, we learned that dredges help Folly Beach’s erosion problem and they go out [in the ocean] three miles and it takes about a month to get a mile down the beach,” said Juliette Lovell, a 7th grade student at Porter Gaud.

Students learned how GIS is used for shore protection projects, such as surveying the borrow areas to ensure that there is enough sand for the project. They also learned about surveying the beach to determine how much sand will be needed for renourishment and maintaining a database of the different off-shore sediment samples that have been analyzed.

Protecting the environment, specifically loggerhead turtles during their nesting and hatching season, is a priority for the District. Students were able to talk with biologists about the effects that renourishment can have on turtles, what the Corps is doing to minimize the impact of the project and what students can do to help. There was even a loggerhead turtle shell that the students could examine.





The students were enthusiastic about the project and several commented on bringing their families back to see the project.

Since the Corps only renourishes Folly Beach approximately every eight to ten years, it was a unique opportunity to share this project with bright, young students who are well on their way to becoming engineers, project managers and scientists.

(Opposite left) Students observe the project in action.  
 (Top) Students inspect a loggerhead sea turtle shell.  
 (Lower left) Students see how tall they are in comparison to loggerhead and leatherback sea turtles.  
 (Bottom two right) Students observe the project and learn about vibration monitoring.



# Putting Stud



By Matt Tomsic, external affairs for the South Carolina State Ports Authority

Lowcountry middle school students are transforming into engineers, economists and other roles as part of an activity to learn about the benefits and costs of deepening Charleston Harbor.

The activity, created by the S.C. State Ports Authority, puts students into the roles of U.S. Army Corps of Engineers personnel who are studying the environmental, engineering and economic effects of deepening Charleston Harbor beyond 45 feet. SCSPA and Charleston District staff lead the activity in middle schools and teach the kids about the harbor deepening project.

"The activity gives students an opportunity to apply what they learn in the classroom to real-world projects happening in their community while giving them a chance to work through and defend decisions, in this case, how deep to dredge the harbor," said Sara Corbett, Charleston District public affairs specialist.

At recent trips to Fort Johnson Middle School and Palmetto Scholars Academy, students were shown a short video about the SCSPA, and Corbett talked to students about the Charleston District's role in the project. Students then broke into groups of four or five and each student had a specific role: economist, engineer, environmental scientist, accountant or project manager. Each role had its own worksheet, and the students used those worksheets to do simple calculations measuring the effects of deepening Charleston Harbor to 50 feet or 52 feet. For example, the economist measured the number of extra containers that could come into a deeper harbor, while the environmental scientist calculated the amount of wetlands affected.

Once the groups finished their worksheets, they discussed their choice of depth based on their calculations. As a class, they presented their findings and used the data to back their decision. Some students were very cost-conscious, leading them to choose cheaper equipment and a shallower depth, and some students who chose 50 feet noted the environmental impacts. Others focused on the economic benefits of 52 feet, citing the increase in trade that would



## S.T.E.M. o

By Glenn Jeffries

Only 12 percent of engineers in the U.S. are women so it's no wonder, according to the Girl Scout Research Institute, that more than half of all girls say they don't typically consider a career in STEM. That is why the District's long-term partnership with Ashley Hall, a girls' day school for children two years old through 12th grade, is so important. Woven into the school's curriculum are opportunities for the girls to understand the correlation between mathematical concepts and scientific applications, making both disciplines more meaningful, rewarding and relevant. That philosophy goes hand-in-hand with the District's STEM goals.

The U.S. Army Corps of Engineers is an Army leader in STEM education and outreach and USACE Chief of Engineers Lt. Gen. Thomas Bostick takes that to heart and puts great effort into exciting students about the



Palmetto Castle



# ents to the Test

come with a deeper harbor. Some enterprising students calculated the number of ships needed to recoup the project's cost; a calculation not asked for on the worksheets.

SCSPA staff created the exercise to teach students about the harbor deepening project and the ports' role in the local, statewide and national economy. More than 1,000 students from all across South Carolina have participated in the activity since it first began in December. Feedback on the program has been positive so far, and during the early trips to schools, teachers offered constructive feedback and tweaks to better the activity. With the word out, the SCSPA and Charleston District hope to continue signing up more schools and teaching middle schoolers about Charleston Harbor and the great work done by the Port and Army Corps.

NOTE: A public meeting will be held in September to present the draft Environmental Impact Statement and the Corps' tentatively selected plan which includes the proposed depth.

**(Opposite left) Students work together to solve the worksheets.**

**(Right) Tomsic answers questions students have about the worksheets.**



Palmetto  
Scholars  
Academy



Fort Johnson  
MIDDLE SCHOOL  
*Learning to serve  
Learning to succeed*



# n the Line

impact they can make with a STEM foundation. He recently took time out of his busy schedule to talk on the phone with Auburn Jeffries, daughter of the Charleston District's chief of corporate communications, who is an Ashley Hall 10th grade student, about his experiences in the Pentagon on a day we will all remember forever, September 11, 2001.

"We are committed to teaming with others to strengthen STEM related programs that inspire current and future generations of young people to pursue careers in STEM fields," said Bostick.

Bostick certainly made an impact on Jeffries; she made an A on her research paper!



Bostick (above) talks with Jeffries (left) about his experience in the Pentagon on September 11, 2001.



# BUILDING THE FUTURE



(Left) A student looks at fish eggs through a microscope.  
(Top) Students show off their work in the construction class.  
(Center) A student practices their handshake with Skinner.  
(Bottom) Students observe the St. Stephen Powerhouse.  
(Far right) A student views one of the fish tanks.





Article and photos by Sara Corbett

Greeted by the sounds of sawing, hammering and drilling as they entered the construction class at Timberland High School, Nancy Jenkins, David Dodds, John Lindsay and Narissia Skinner went to THS to talk to students about the “real world” and what to expect when they graduate in May.

Typically students from THS go straight from high school to working in the construction industry so it is very important for them to be able to read a blueprint. Jenkins, architect, not only reads blueprints, but can also draw them. She gave an overview of the various acronyms, abbreviations and legends used as well as the measurement systems used for different types of drawings. After the presentation, Jenkins and Dodds, construction division chief, worked with students individually on reading plans and what to look for.

Dodds talked to the students about putting their best effort and quality into each of their projects, because if they do a good job the word will spread and they will be hired by other companies. But to counter that, if they do a poor job, word will spread and they will lose work or money if they make a mistake. He went over ways to avoid making costly mistakes like using the correct measurements and applying geometry to projects.

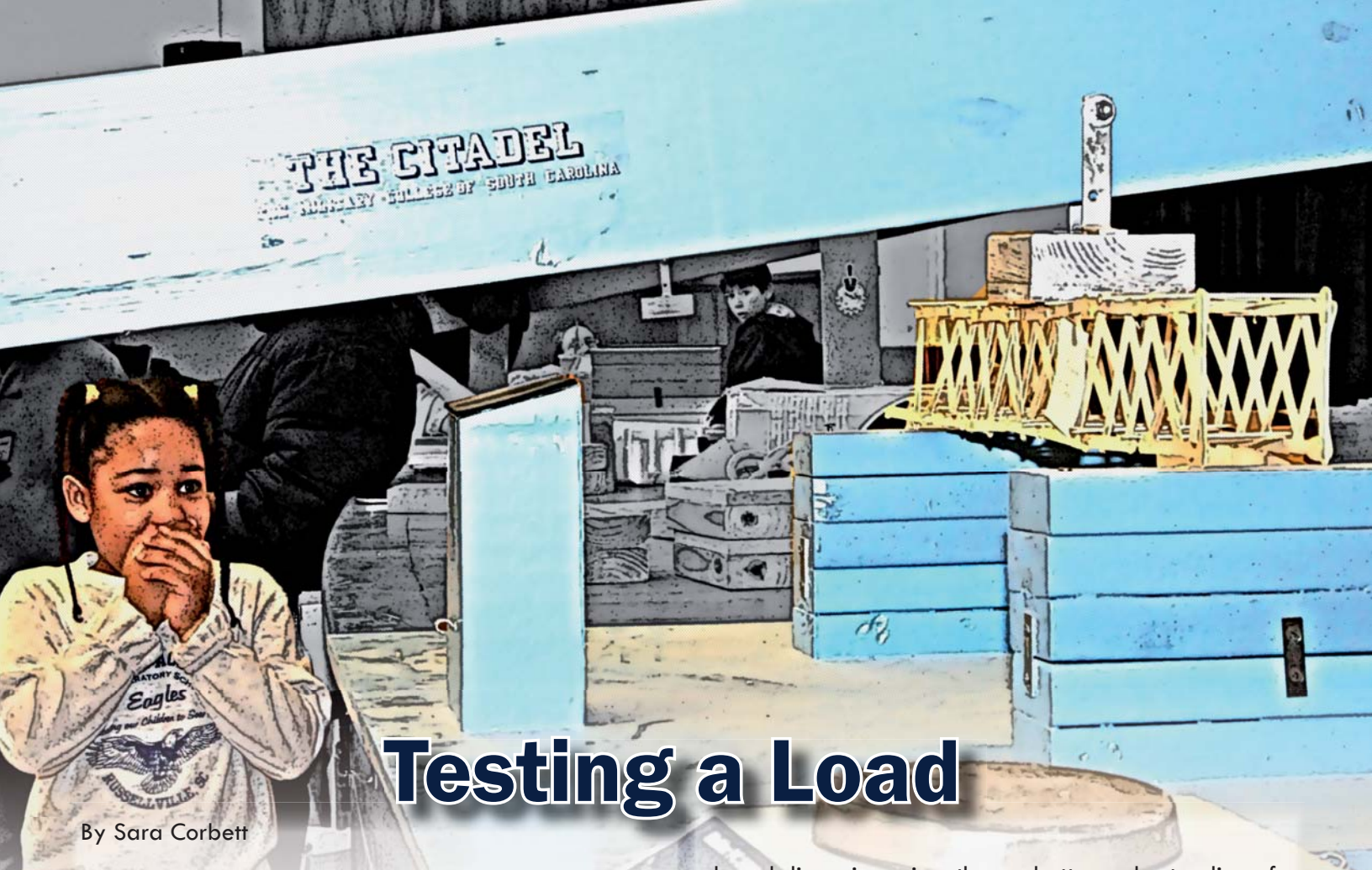
“I can’t re-iterate enough; do thorough measuring, provide quality work and maintain a good attitude and you will be repeatedly hired,” said Dodds. “When word gets out that there is an outstanding new plumber, mason or carpenter, everyone wants to hire them and you want to be that guy.”

Safety is the District’s number one priority and Lindsay, safety and health officer, advised the students that it should be theirs too. Lindsay showed videos and pictures of accidents on construction sites, most of which were met with grimaces and gasps. He also showed the proper safety equipment that should be worn at all times on a construction site as well as unsafe practices to look for at a construction site.

All of these are things to keep in mind while working, but before any of this can happen, a job interview and offer needs to occur. Skinner, executive assistant to the commander, gave an overview of what students should wear to interviews and how to dress and act professionally. She also warned the students not to show up to interviews with visible tattoos, piercings or wrinkled clothing. She ended the day by having each student come up to her, shake her hand and greet her, just like they would to someone who was going to interview them. And if they didn’t do it to her liking, she made them re-do it, ensuring that they had it perfected.

Students from THS also visited the District’s St. Stephen Powerhouse later that month. The class toured the visitor’s center, which was almost complete with its renovation. They then visited the onsite fish hatchery, operated by the Department of Natural Resources. DNR specialists showed the students the entire process, from breeding to release, and explained how the fish are raised at the hatchery. Students looked at all of the special equipment that is used throughout the process to ensure that the millions of fish that are hatched are raised properly until they can be released in the canal.





# Testing a Load

By Sara Corbett

Picture frames, birdhouses and pencil holders are a few items that can be made from craft sticks and wood glue, but the only product The Citadel is looking for is a sturdy bridge.

Each year, The Citadel hosts a bridge building competition to celebrate National Engineer Week and each year Charleston District employees volunteer to judge this event. This year, Brendan Kight, engineer and Citadel graduate, judged approximately 25 bridges made by middle and high school students from around the Charleston area.

"Innovation and creativity in the STEM fields are the hallmark of an advanced nation and economy," said Dennis Fallon, Professor of Engineering Education at The Citadel. "The quality of life that we enjoy in the United States is directly tied to the STEM fields. Students need to be exposed in these areas very early in their education. The bridge building competition provides this opportunity to engage in one facet of STEM by using their creative skills to design a craft stick bridge."

There are two components to the contest. The first round of judging is based on best architectural design, best original design, best craftsmanship and most constructible. The second round is best structural design, also known as load testing.

"Encouraging students to build a bridge out of set materi-

als and dimensions gives them a better understanding of what it's like to build a house or building; you have set material and dimensions that you have to follow," explained Kight.

Kight judged the first round of the competition; he looked for the most aesthetic structure, most original, the best quality and finally the most functional aspects if the bridge were to be built in the "real world." Each category had a first, second and third place award.

"I really enjoyed interacting with the kids," said Kight. "They were very interested in the criteria of the judging and how they could win. It was a great competition between the kids."

The second round judges used a load test beam to measure the weight to height ratio of the bridge. The bridge was placed between two beams and sand was slowly added to a bucket, adding weight, to the other end of the beams. The lightest bridge to support 100 pounds was the best structural design winner.

Congratulations to all the winners of the bridge building competitions.

(Above) A young participant watches as her bridge is tested.



THE CITADEL  
THE MILITARY COLLEGE OF SOUTH CAROLINA





# Recruiting America's Future Engineers

By Sean McBride

What do you get when Clemson University, North Carolina State University, local construction/A&E firms and the U.S. Army Corps of Engineers get together in one room? At The Citadel, that meant a career fair had come to town.

Maj. John O'Brien, deputy district commander, and Max Carroll, Fort Jackson project manager, represented the Charleston District at the career fair, which was set up primarily for upperclassmen of The Citadel's night classes.

"Our office is right next door to The Citadel, so we wanted to let them know about employment opportunities with USACE," said Carroll. "Some Citadel cadets do a great service to our country so we should take the opportunity to show them what we do."

Approximately 150 students wandered through the fair learning about educational and business opportunities for post-graduation employment. More than a dozen students talked with O'Brien and Carroll about engineering jobs in the federal government. While O'Brien is an active duty officer in the Army Corps, Carroll has experience with the Navy Civil Engineering Corps, as well as the Army Corps, so their broad range of experiences enabled them to talk about opportunities all around the country and the world.

Around the same time, Carroll also attended an event put on by the Society of American Military Engineers where

five Citadel students gave presentations on their recent trip to Italy. These students had gone abroad to study engineering in Italy as well as see first-hand some of the most famous examples of architecture and engineering in the world. After the presentations, the students rotated through the room to different stations where Carroll and other leaders from local private firms, as well as government agencies, in Charleston discussed their personal experiences and opportunities at their organizations.

The Citadel's engineering department is in the process of adding mechanical engineering to their list of engineering bachelor's degrees, which had previously included civil, electrical and environmental engineering. This provides students with more opportunities and more links to places like the Charleston District.

"It's exciting to see the growth of the department with the addition of mechanical engineering," said Carroll. "Also, the trip to Italy is what gets people excited about engineering. I would have loved to have done something like that and am happy that The Citadel is engaged with getting people excited about engineering."

Participating in events such as these and seeing the opportunities students are getting today is all part of the Charleston District's goal of helping recruit America's future engineers through STEM outreach.



# Cougars Pounce

Article and photos by Sean McBride

Students from College of Charleston's Water Use Law class took a rare field trip to Folly Beach to learn about the Folly Beach Shore Protection Project and its impacts to residents and the surrounding area. This elective class is part of the urban studies department, which focuses on understanding problems and opportunities of the city and its environment through urbanization.

The class of seven first met at Folly Beach City Hall for a discussion with the project's managers David Warren and Wes Wilson. Here, they learned about the background of the project and areas that were being studied, as well as about some of the complications that have been faced, since that is the nature of their course. One of the most intriguing things that the students learned about was how the District was preparing for sea turtle nesting season, including determining what type of sand to use. For example, if the sand that is pumped onto the beach is too dark, the turtle's nest might get too warm, which would produce a higher percentage of female hatchlings.

"I am thoroughly impressed with the level of care that has been taken to ensure that no sea turtles are harmed," said Anthony Lato, a junior in the class. "The fact that the different colors of sand affect the sex of the turtle, I did not know that, and the fact that it is known and that is the type of sand they are looking for shows that the turtles are important."

After the discussion in city hall, the group went to the project site to watch the construction in action. Even through the fog that was rolling in, the students were

Note: At press time the first sea turtle nest was found and relocated due to the possibility of tidal overwash.

**(Left)** Students from College of Charleston learn about the Folly Beach project from Wes Wilson. **(Top right)** David Warren explains the project to the students at City of Folly Beach Town Hall before viewing the site.



# on Folly Beach

able to see how big the site was and could see all the moving pieces. Warren and Wilson explained that the sand and water mixture is pumped onto the beach through a series of pipes from a dredge at a borrow area three miles offshore. Heavy equipment then carves tracks in the sand for the water to return to the ocean, leaving the sand behind. The equipment then shapes the sand that is left behind to build the beach up to its new level, therefore protecting the infrastructure on Folly Beach. The students seemed to absorb as much knowledge as the beach absorbed sand.

"I think that the magnitude of the project is interesting and that it's very efficient," said Brett Morgenstern, a junior in the class. "The environmental aspect and concern that they have is really cool."

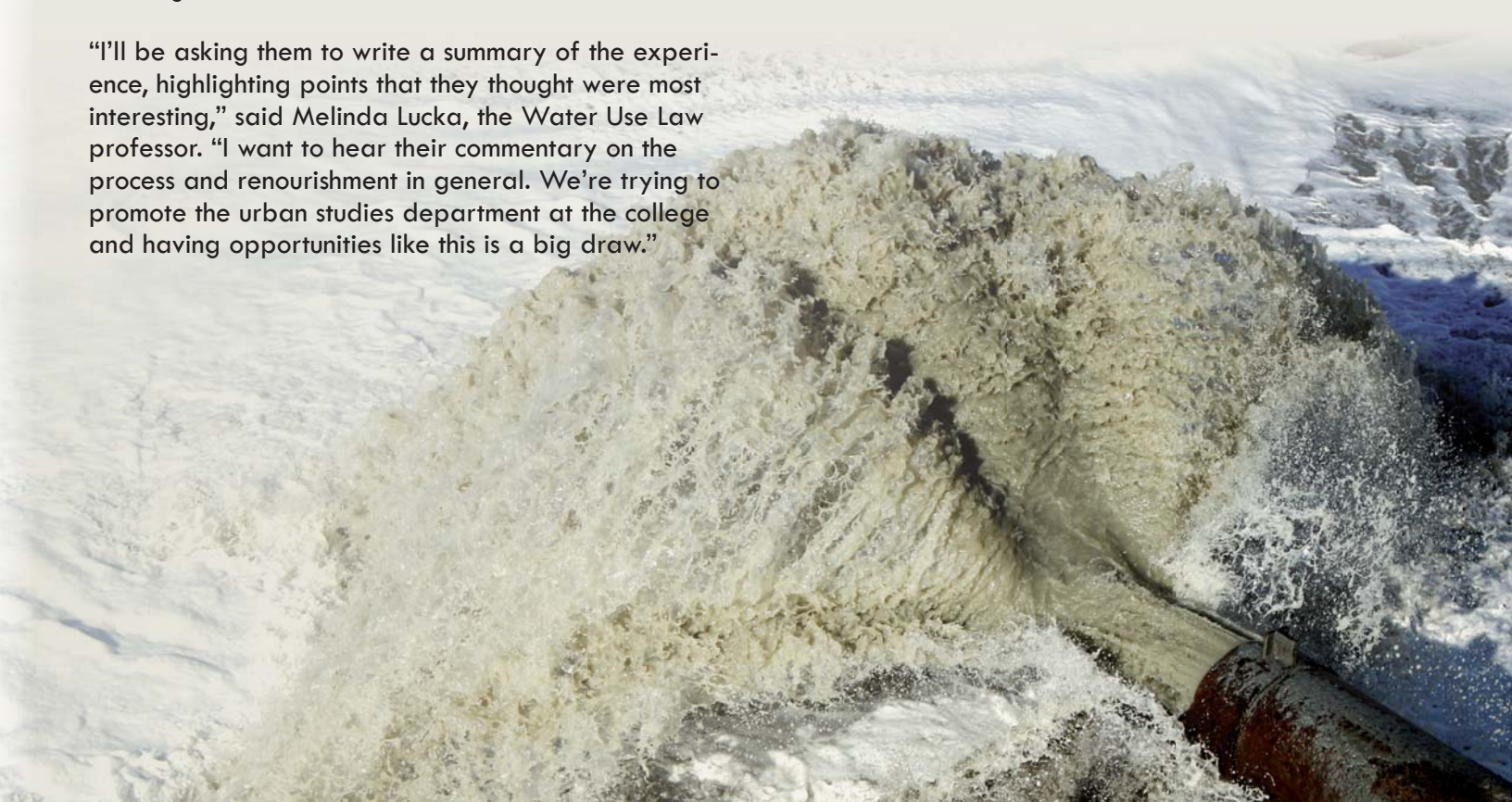
"Something I found interesting about this was how much really goes into the project," added Lato. "I didn't realize that it was this big of a deal with the homeowners and the taxpayers and how many different entities were involved in it. This was my first college field trip and it was beyond all of my expectations."

But the students won't get out of this field trip without an assignment.

"I'll be asking them to write a summary of the experience, highlighting points that they thought were most interesting," said Melinda Lucka, the Water Use Law professor. "I want to hear their commentary on the process and renourishment in general. We're trying to promote the urban studies department at the college and having opportunities like this is a big draw."



## COLLEGE of CHARLESTON





# MAKING CONNECTIONS

By Matthew Grajewski

On March 12, I took a break from classes at Clemson University to shadow at the U.S. Army Corps of Engineers office in Charleston in order to learn more about a potential career. As an industrial engineering student and cadet in the ROTC Fightin' Tiger Battalion, I hope to use my STEM degree to serve our country and others around the world. Through Clemson's alumni network, I was paired with Lt. Col. John Litz, commander of Charleston District. Having little background on what the Corps has to offer, I arrived eager to learn and observe the day's events.

To my excitement, Lt. Col. Litz personally took me along with him to visit Fort Sumter and Fort Moultrie to meet the representatives of the National Park Service. The day began with a ferry ride over to Fort Sumter. Once there, we were escorted by a park ranger around the fort, where he explained potential projects that could develop in the near future. Lt. Col. Litz and the superintendent of the National Park Service performed some preliminary assessments of each potential project using the "Three E's" of feasibility: engineering, economics, and environmental impact. Once Lt. Col. Litz and the superintendent finished discussing projects at Fort Sumter, we took the ferry back and drove to Fort Moultrie. There, Lt. Col. Litz and the park ranger evaluated other jobs similar to those at Fort Sumter.

My experience with the Corps was very rewarding. First, I got to learn about the incredible histories of Fort Sumter and Fort Moultrie. Being a Pennsylvania native, I knew very little about the forts and enjoyed the private tours. Second, and more importantly, shadowing Lt. Col. Litz gave me the opportunity to directly apply concepts I learned in the classroom to applications in the field. From environmental studies of Charleston Harbor to the present- and future-worth of capital to be invested into a project, I not only understood the discussions but even got to offer my opinion on some matters. I believe making connections between my studies and real situations prepares me to be an engineer in the future and be a better student today.

I am most thankful to Lt. Col. Litz and all his staff for their hospitality. Since no one in my family has ever served in the military or worked as an engineer, I am always looking for a mentor to share with me their experiences and advice. Lt. Col. Litz and his deputy commander, Maj. John O'Brien, both fostered my ambition as a student and gave my ambition some direction. The commander and his deputy are excellent resources to any student looking to work in STEM fields and are prime examples of engineers serving the city of Charleston.

**Photos on opposite:**

**(Top) Grajewski, (third from left) prepares to board a helicopter with classmates.**  
**(Left) Grajewski meets with Litz to learn about the District's programs.**  
**(Right) Grajewski (far right) jokes with friends on campus.**





CLEMSON<sup>®</sup>  
U N I V E R S I T Y



# Leading

## The Way

*"The aim of education is not knowledge, but action." Herbert Spencer*

Photos and article by Sara Corbett

To put student's education into action, Project Lead the Way, a non-profit organization, was created to develop hands-on, project-based STEM curricula to be used by elementary, middle and high schools as well as provide training for teachers.

When seventh grader Keishon Skinner heard about the Gateway to Technology program, Project Lead the Way's middle school program, at his school, Sedgfield Middle School, he knew he wanted to be a part of the program.

"I have always liked my math and science classes," says Skinner. "In Gateway to Technology I get to use not only math and science but also technology to build projects and solve problems. It's a lot of fun!"

Admittance to the program is competitive and not just anyone is accepted.

"Students apply for the program and are handpicked," said Rhianon Neumann, Gateway to Technology teacher. "We have to ensure that they are capable of the work level and have the skills necessary to be successful in the class."

The most recent project the students completed was building a bridge, but not just any bridge would do.

"The bridge had to be attractive, wide enough for the Batmobile to cross over it, strong enough to hold 10 pounds, and tall enough for a barge to pass underneath of it," said Skinner. "All of these made the bridge building project more of a challenge, but that just made it more exciting for me."

Before the students could build the bridge, there were several "real-life" problems that needed to be solved and components that needed to be considered. The students were presented with the problem: an island was in economic depression and needed more tourists to drive business. Building a bridge to transport tourists was a feasible and economical solution. Like any "real-life" project, there was a budget; in this case it was \$40,000.







Once the solution to the problem was solved, Skinner and his team started the process. The first step was the design brief; in this step they had to look at the problems and constraints of various bridges and then select the best one. The second step was the technical drawing; Skinner and his team had to draw the bridge from several view points and decide what material to use and the measurements. The final step was to build the bridge; during this step the team had to conduct six tests and recommend changes to make the bridge better or stronger.

Finally the student's bridges were put to the test.

"This was my favorite part, because I could show off my bridge," said Skinner. "Even though we didn't win, I am very proud of my team and the bridge we built."

While Skinner isn't sure what he wants to do when he grows up, he has taken several opportunities to learn and experience as much as he can in the STEM field. Skinner took advantage of the fact that both his parents work for the U.S. Army Corps of Engineers, Charleston District and spent the day at the District.

He visited with the different divisions, but his favorite part of the day was viewing the never-released fish lift video and offering input to make the video better.

"The video was made targeting students his age," said Joe Moran, fish biologist. "I wanted to make sure kids his age would like the video. He offered valuable suggestions to make the video even better."

The District looks forward to seeing which STEM path Skinner chooses.



**(Opposite) Skinner inspecting his bridge.**

**(Top left) Skinner stands with his proud parents.**

**(Top right) Skinner enjoys building the bridge with his team.**

**(Middle) The completed bridge meets all the requirements.**

**(Bottom) Skinner works with his Gateway to Technology teacher.**



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