No one can deny that Clemson University attracts passionate students. From the classroom to the athletic fields, Clemson students are known for their commitment to excellence and their exceptional pride in their school. Sometimes this passion can’t be contained in a normal classroom setting. Clemson’s unique undergraduate research program, Creative Inquiry, is found at this crossroad between the classroom and the outside world. With over 3,000 students participating in more than 400 projects ranging from raising awareness of important social issues to analyzing fruit juice for cancer-fighting properties, Creative Inquiry provides students with an outlet for their curiosity and allows them to take a closer look at the problems facing our University, our community and beyond.

This second issue of Decipher, Clemson’s Creative Inquiry magazine, was produced by the Pearce Center of Professional Communication’s student interns. The Pearce Center’s mission promotes effective communication throughout all disciplines, and Decipher magazine is a testament to this goal. The students involved in the production of this magazine come from colleges and departments throughout the University, and were tasked with shedding light on the extraordinary research projects being conducted by undergraduate students.

The purpose of this magazine falls seamlessly in line with the purpose of the Pearce Center – communication is an essential part of any academic study, and Decipher exists to communicate the exciting research and important work that is happening all over Clemson’s campus.
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When Albert Einstein was an elderly scientist near the end of his career at Princeton University, he was in his lab one day working with a young assistant. In his need to fasten the pages of a report together, Einstein began looking for a paper clip. He found an old, misshapen one and began working to reshape it. His assistant saw him doing this and brought Einstein a box of brand new paper clips. The scientist thanked him, took a new paper clip from the box, and began working on the old clip to reshape it in the form of the new clip.

Amazed at Einstein’s action, the young assistant asked, “Sir, why are you still trying to shape the old clip when you could simply use the new one I gave you?” Einstein’s answer was simple and profound: “It is very important to always complete a process once you have begun it. It’s the only way to see your work realized and the only way to gain knowledge from your experience.”

Reshaping a paper clip may not seem like a complicated process, but Einstein’s message about the importance of following through a process to reach a goal, however small, certainly fits all of our students who have been members of Creative Inquiry teams. Not only have they learned the beauty of working as a team, they have also seen the excitement that comes with creating innovation and collaboration that ends in discovery.

Einstein would be proud of the way Creative Inquiry teams work together in the process of researching whatever challenge or question they have chosen to explore; he would be pleased at how the teams carefully complete the process of recording what they have discovered, and finally, he would applaud how Creative Inquiry students follow a careful process in communicating and presenting their results.

In this second issue of *Decipher*, you will read about Clemson’s current Creative Inquiry teams and the exciting research they are conducting. You will see how the cross-disciplinary teams draw upon one another’s diverse academic backgrounds and expertise to form a well-balanced group, ready to tackle unique challenges and pose sometimes unorthodox questions for research.

We welcome you to this second issue of *Decipher* where you will read about Clemson’s current Creative Inquiry teams and the exciting research they are conducting. Enjoy!

Nadim M. Aziz, PhD, F.ASCE
Interim Provost and Vice President for Academic Affairs
The results are in – Clemson students have definitely declared Creative Inquiry to be invaluable.

The numbers tell the story. Since its start eight years ago, 13,000 students have participated in 706 unique Creative Inquiry projects. Some projects are completed, others continue, all are productive.

Creative Inquiry gives undergraduate students a taste of the workplace and graduate school experiences - they design and tackle unique projects, see them to completion and communicate the results. In the words of a student, “it is a wonderful way to gain research experience. It allows you to learn how to work with a team to solve a problem.”

It’s difficult to keep up with their many accomplishments. Creative Inquiry faculty and students have produced at least 130 articles in professional journals, 288 presentations at conferences, 7 patent disclosures, and won 31 awards and grants.

Creative Inquiry students put their classroom learning to work solving real-world problems. This magazine features only a small fraction of current projects. A student voiced a common sentiment, “I love that I get to do ‘real’ work within my field.”

The benefits are long-lasting. Creative Inquiry alumni report that their experiences directly affected receiving offers for jobs and graduate school, and are “great resume boosters.”

Students say it best, “I love CI. I think everyone should join a team” and “I would do it again in a heartbeat.”

Barbara J. Speziale, Ph.D. 
Associate Dean, Undergraduate Studies and Director of Creative Inquiry
There are only 3,200 wild tigers left in the world. The enormity of this problem has not gone unnoticed by Clemson students. In 1997, Clemson students founded Tigers for Tigers, a student initiative to support tiger conservation around the world. As Tigers for Tigers president Sean Carnell explains, “There are over fifty schools out there with tiger mascots. Here at Clemson, we know how much pride these mascots make us feel for our school. So we decided to work with other schools to extend the pride from the football field to help real tigers in the wild.”

Initially, Tigers for Tigers aimed to create a national coalition and host the first national summit to promote collegiate awareness about the situation. The student group was able to gain the support of President Barker, who sent letters to other tiger mascot schools to enlist support for the cause. Collaborating with the 57 other tiger mascot universities was not an easy task. Tigers for Tigers advisor, Dr. David Tonkyn, and a group of dedicated students formed a Creative Inquiry team. After two years of hard work, the team made the dream of a national coalition become a reality, as the National Tigers for Tigers Coalition was formed. This united effort allows students across the country to work together through social media, advocacy programs and involvement abroad to help protect tigers. In April 2013, the team hosted a National Tigers for Tigers Summit. The purpose of the Summit was to establish a foundation for the national organization, develop a strategic plan for students helping tigers and promote student awareness of the issues associated with tiger conservation.

The 2013 conference was an enormous success. Featured speakers included Dr. Ron Tilson, a world premiere tiger biologist, Dr. John Fitzgerald, the senior policy director for the Society for Conservation Biology, representatives from the International Fund for Animal Welfare and many others. While sparking awareness and admiration in students interested in tiger conservation, visiting tiger experts also helped the Creative Inquiry team establish Tigers for Tigers as a national organization. Carnell explains, “we built wonderful connections with our partners. Especially at the conference, we worked with wonderful people who knew exactly what needed to happen to make a change. They showed us how national policies are developed. It was way more exciting than reading a textbook.”
Beyond the conference, Tigers for Tigers is working to improve its social media outreach program through developing a Facebook page and filming viral videos to spread awareness. And the Creative Inquiry group aims to promote the Big Cats and Public Safety Protection Act, a federal bill banning the private ownership of big cats in the United States. Also, for the past nine years, Tonkyn and former Director of International Student Services Louis Bregger have offered an opportunity for students to visit India to see tigers in the wild and learn about their conservation. Such opportunities are important for the success of the coalition, Carnell notes, because “that’s where all the motivation started for us. We went to India, saw tigers in the wild, and came back excited to help.” The incredibly diverse number of projects Tigers for Tigers encompasses makes this Creative Inquiry project applicable to students with all sorts of interests including finance, marketing and biological sciences.

“Here at Clemson, we know how much pride these mascots make us feel for our school. So we decided to work with other schools to extend the pride from the football field to help real tigers in the wild.”

As Tigers for Tigers continues to grow and develop, the group hopes to expand on a national level. But as 11 schools are now united across the country, working tirelessly to help real tigers around the world, Tigers for Tigers has successfully made solid steps to saving Clemson’s beloved mascot: the Bengal tiger.

For more information, or to find out how to get involved, visit the Tigers for Tigers website at t4tcoalition.org or find them on Facebook at facebook.com/t4tcoalition.
Raising and training young horses is not an easy task. The process requires learned skill, practiced patience and natural ability. And in the horse industry, in order to turn a profit and maintain a strong reputation as an equestrian trainer, a horse must be trained correctly. It is also important that, once a horse is placed on the market, the horse is sold at a value reflecting the time and energy spent on the horse’s upbringing. Thus, the horse market functions as a dual field, necessitating strength in both equestrian training and horse marketing. Dr. Kristine Vernon, recognizing the value of such a duality, began her Creative Inquiry project to capitalize on the duality of the horse market through integrating student learning into Clemson University’s equestrian program.

The duality of the horse market makes the Horse Show Team relevant to students in a variety of majors. Vernon notes that in addition to managing the horses, students in the project “try to integrate the science and the art of horse management and equitation. And the other components are sales and marketing. We are the only school in South Carolina to have a program like this because we are the only university that breeds our own horses, trains our own horses, and sells our own horses.” The fortunate variety within the horse market provides many students with the chance to individualize their studies within the Creative Inquiry—marketing majors and veterinary science majors have equal participation opportunities within the team.

While the project offers Clemson students an unrivaled opportunity to work and engage with one of the strongest equestrian programs in the Southeast, the equestrian program itself also benefits from student involvement. Vernon describes the positive outcomes from working with students as she explains, “it has gained more notoriety for the equestrian program as a whole. Groups such as the South Carolina Quarter Horse Association have students at the forefront of their mind, which creates for us a partnership with those types of associations, potential job opportunities for students, and may eventually lead to donations from groups who see and believe in what our students are doing.” With such incredible prospects for both Clemson’s equestrian program and involved students, the CI serves as a forerunner for many students interested in equestrian careers. The project encourages student connections with large, prestigious equestrian associations, which strengthens students’ career prospects and simultaneously helps to vitalize Clemson’s equestrian program.

Student interest drives this Creative Inquiry. And this student interest stems from both student interest in horses and the desire to exercise individual skills. Vernon explains, “I try to recognize specific strengths in students. For me, this Creative Inquiry is about creating discovery opportunities for students rather than answering my own list of questions.” This student driven opportunity allows the Creative Inquiry to work around student interests and student questions. Students are therefore able to grow and learn in areas that interest them, whether that includes marketing or veterinary sciences. And all the while, students can continue learning about and enjoying being around horses.
Imagine sitting next to a swimming pool or standing at a tailgate in the blazing heat of summer. There might be drinks sitting out, but even the cold ones warm up quickly. As student Cody O’Rear says, “Who doesn’t want a colder drink?” He and Kyle Johnson are undergraduate students working to make their invention idea into a reality. In the department of chemical and biomolecular engineering, with the help of their advisor Dr. Chris Kitchens, the two are developing a koozie—a fabric drink holder—that keeps beverages cooler for longer.

In their research, Johnson and O’Rear are working to chemically modify koozies so that when the fabric is wet, it pulls heat out of the drink and cools it down. In a process similar to sweating, the wet fabric would absorb heat in order to evaporate the water. The students are specifically using the polymer polyvinyl acetate; since the chemical has good evaporation properties, it could be added to the koozie fabric to help it cool down drinks. In the lab, their research focuses on finding the best method to add the polymer to the koozie.

Johnson and O’Rear’s ultimate goal is commercialization of their invention. There is currently nothing on the market resembling their idea, so they see this as a good opportunity to develop a product and start a business based on it. Their enthusiasm for this new product is one of the reasons why Kitchens agreed to start this Creative Inquiry project with them. He believes that the science and engineering curricula at Clemson should have a bigger emphasis on entrepreneurship. Many students have creative ideas for new products and technologies but do not have the resources to run experiments or build prototypes for their ideas. The Creative Inquiry research program is one way that students can get some financial help and mentoring from faculty.

Everyone involved with this project is optimistic about its success. Johnson and O’Rear are seeing positive results in the lab and believe that they are moving in the right direction toward the drink-cooling koozie. But even if they ultimately do not find a way to make the final product, they still see the project as a success. Kitchens notes that “the worst outcome of this would be that they actually got some experience working in lab, applying fundamental principles that we teach in our chemical engineering classes.”

According to Johnson and O’Rear, learning what does not work is equally as valid as figuring out what does. Johnson strongly believes that “even if it doesn’t end up working out, it’s just something cool to say: I looked into this, and it doesn’t work, but I was the one who found it out.”

By Jessica Lau

Inventing a BETTER KOOZIE for your drinks

Fall 2013
This April, approximately 2,000 lights illuminated the night and led the way for the thousands of students that cross Clemson’s library bridge each day. No, not merely for decorative purposes—it wasn’t a holiday or a fundraiser. The purpose behind the lights was to help people see—but in a more figurative sense. The lights were to help us see the millions of victims of date rape violence in the United States every year. But instead of emphasizing the statistic of the nation as a whole, the lights represented something closer to home.

Each light was someone’s sister, daughter, girlfriend, granddaughter, neighbor, best friend or niece. Each light was someone you know well or it could be someone you only know of. It could even be you. Each light represented a girl from Clemson University who, within the next year, will experience some form of date rape or sexual assault. Each light represented a victim with a story. With the help of sociology and anthropology specialist Dr. Sarah Winslow and her Creative Inquiry team studying gender, sexuality, and violence on university campuses nationwide, they finally emerged from the dark.

The idea for the class, which started in the fall semester of 2012, first began when students started to take initiative in discussing such a personal topic. “It started somewhat when we had Women’s Studies speaker Michael Kaufman give a speech in Tillman Hall about masculinity and the treatment of women,” Winslow said. “There was an opportunity afterward to ask questions, and I was surprised to find that a lot of students who were vocal on this matter were young men. They were passionate about this issue—what it meant to be a young man and the sort of expectations they were held to, and what that meant for young women.” After meeting with students who recognized gender stereotyping and preconceived ideas about sexuality and the role it plays among issues such as date rape, Winslow made it her mission to gather them together and evoke some form of positive change for Clemson.

“Ultimately what we want is some information to offer back to the campus community,” Winslow stated. “They seem to have a good understanding of this, but they seem to be in the dark about some other issues.” Some of the current projects the team has taken on are mostly based upon the goal to inform students of what resources are available to them at Redfern and other locations on campus.
Last semester, one of Winslow’s students, Greg Bateman, had a project that consisted of using Cooper Library’s free speech wall to ask students what they thought about date rape. “From his perspective, it got people talking, but there was still a lot of joking around, and not a lot of people wrote things. There were comments like ‘Don’t be so drunk’ and a lot of the focus was still on what women need to do to prevent it as opposed to men.”

According to Winslow, this is one the many myths about date rape violence that she hopes to eliminate. “The classic story we tell about rape is the stranger who jumps out of bushes, but the vast majorities of rape are not that. They are acquaintance rape or date rape—things that happen at parties.” And because this is such an accepted mindset of so many, the women who really are victims of this form of rape will not readily identify it. “They [the girls] will report things that happen to them that meet the definition, but they’ll say things like ‘I was really drunk’ or even ‘There were a couple of guys there and I’m not really sure who it was.’ And despite what they believe, they’ve still experienced sexual assault and that’s something they need to process.”

So how are they tackling this important issue this semester? “Well, we can read all the research we want, but we really need to hear from students.” In addition to the light display, Winslow said that there will also be an awareness campaign and her students are working to create startling posters with statistics about sexual violence. They are even trying to contact local bars in downtown Clemson to see if they will give out wristbands with some of these facts. Informing people about this issue is the key to making a change. “We’re not going to solve this problem by putting up better lighting or making sure that perpetrators don’t have places to hide in bushes. We’re going to tackle this issue by changing how our campus thinks about masculinity and femininity.”

There is still progress to be made in terms of sexual assault awareness and prevention on Clemson’s campus. With regard to where Clemson stands relative to other institutions, Winslow notes, “we’re not any worse, but we’re also not any better.” She hopes that her Creative Inquiry group’s research and awareness efforts will make a notable difference. The lights have been off for a while, but now they are starting to finally shine.
The agriculture industry relies on genetic research to breed better crops. Research in genetics can lead to a better understanding of how plants get nutrients and what factors affect growth; breeders can capitalize on this information to improve crops for farmers. *Medicago truncatula* is well-suited for study in the laboratory; it is a relatively small plant, with a small genome and short maturation time. Despite the plant’s simplicity, researchers can use information gathered about its growth to better understand larger, more complex crops important in agriculture.

In genetics research laboratories such as Dr. Julia Frugoli’s, the *M. truncatula* plant serves as a model to study legumes. Legume plants, including lentils and beans important in agriculture, are unique in that they establish a mutually beneficial relationship with Rhizobia bacteria. Although the plant and bacteria can grow independently, they can also interact and alter each other’s development. Bacteria take up residence in root nodules of the legume, providing fixed nitrogen to the plant directly from the air. In turn, the legume feeds the bacteria with carbon from photosynthesis. Both nutrients are required for each organism to develop.

Frugoli and her Creative Inquiry team are investigating the signaling that occurs in this interaction. They are interested in how the plants establish and regulate the relationship with the bacteria: How many bacteria should the plant let in? How many nodules should the plant make? The group is approaching these questions by studying the genetics of mutant plants that do not regulate this pathway properly. By comparing normal plants to plants that over-produce nodules, students can find differences between them. In this way, they can determine which genes, proteins and hormones are involved in the signaling pathway that regulates nodule production.

Characterizing nodule development can lead to more than just a better understanding of legume plants. Frugoli’s lab has found that the genes identified in *M. truncatula* are not specific to plants that produce nodules. Because they are conserved in other plants, Frugoli believes that the signaling
pathway studied in her lab is used by all plants to respond to changes in nutrients. All plants monitor their levels of carbon and nitrogen and send out more roots to seek nutrients when a deficiency is detected. Understanding how plants do this would have important implications in agriculture; if scientists and farmers can control the pathway, they could adjust it to breed better crops.

In this Creative Inquiry project, undergraduate students majoring in biochemistry or genetics have the opportunity to conduct laboratory research. They learn lab techniques and writing skills, gaining experience in what scientific research is like at a graduate and professional level. But perhaps even more important, Frugoli believes, are the critical thinking skills that her students develop through performing experiments: “When [students] troubleshoot an experiment, it’s very much like a logic puzzle.” Students cannot simply look up the answers in a textbook; because they are working to acquire new knowledge, they must figure out the reasoning and logic behind experimental results.

“When [students] troubleshoot an experiment, it’s very much like a logic puzzle.”

A major challenge for the Creative Inquiry group is the slow pace of the project. Ten weeks may be a relatively short period of time for a plant to grow, but it is also the better part of one semester. Furthermore, in order to study the movement of a hormone inside the plant, Frugoli’s students had to insert a specific hormone tracking gene into the plant; this process took a good two years to complete. The students in the Creative Inquiry project perform short-term experiments, but also observe the work of graduate students who manage the long process of growing and preparing the plants.

Through the project, students who intend to pursue a graduate degree learn what to expect while doing scientific research in the future. Moreover, Frugoli hopes that other students can also benefit from participating in the project: “Even if [students] never go into research, understanding how it works is important for scientist citizens.” First-hand knowledge of the meticulous and slow process of scientific research contributes to understanding science issues in the news. In particular, understanding genetics research can go a long way in being informed about topics such as genetically modified crops. Knowledge of the science behind the issues — beyond the basics that the media mentions — can be the key to making good decisions.
For the average student, running laps at Fike is probably the last thing on the mind. With so many academic activities, it is reasonably hard for anyone to imagine giving up thirty minutes of their time to get all sweaty lifting weights. After all, it’s not like you’re obese. Sure you could lose a couple pounds. Everyone could lose a couple pounds. But it isn’t like you’re scarfing down hamburgers with multiple sides of fries every time you’ve got a bit of extra down time. You even had a few carrots yesterday—and well, let’s face it—studying for that calculus exam tomorrow should be the number one priority. Shouldn’t it?

Since this is a typical thought process of students at Clemson, Director of Fitness Services and Programs at Fike Recreation Center, Susan Pope, and her Creative Inquiry team have been working on changing that attitude through the creation of the Clemson Wellness Program. The team is testing, designing and may permanently implement a program that will not only help students become healthier in terms of physical activity and nutrition, but will also help reduce the tension that comes with leading a stressful student life. And the best part? Becoming healthier will finally be a top priority since the Wellness Program will include class credit.

According to Pope, Clemson began thinking of this 11 years ago when many faculty members realized campus health was an important issue. “President Barker challenged some of the professors. He wanted us to come up with a way to make students both happier and healthier,” Pope said. It was then that the idea for improving campus fitness was born, but it wouldn’t come to fruition until a Creative Inquiry team took it on eight years later.

Emily Pinner, a recent graduate and previous three year member of the team, said that helping the actual students in the class become more physically fit was not their original goal. “It didn’t start as a wellness program. It was more of just an incentive for people to come here [Fike].” But both Pinner and Pope soon realized that instead of just advertising fitness, they needed to teach the students how to become healthier.

The team designed the wellness course, which
teaches students about fitness in a number of ways—ranging from how to properly use gym equipment to learning how to manage stress and anxiety levels. “We want the class to be intimate. We want to be able to sit down with our students and say ‘Tell me what’s been going on with your week.’ That’s one drawback to a big institution like this. There aren’t as many opportunities to work like that,” Pope said. Pinner wants to help emphasize the resources that are available to the students may be struggling. Sometimes maintaining that 3.0 GPA becomes too overwhelming, and students start to fall into bad habits like unhealthy eating. “A lot of the time people don’t realize they’re even living an unhealthy lifestyle,” Pinner said.

“We want to catch students at a time when they are making decisions about what to eat and what not to eat when they are first starting to make meals for themselves.”

Pinner also believes that relating to students at this time in their lives is very important. “We want to catch students at a time when they are making decisions about what to eat and what not to eat when they are first starting to make meals for themselves.” She also discussed the importance of eating healthy in a world of heavily fried and buttered Southern cuisine. “We had a kid one time that came from the Netherlands and he was like ‘We never eat that much bread!’ Learning to address these cultural influences is crucial to helping initiate change. “We want to be proactive as opposed to reactive,” Pinner said.

But isn’t Clemson a jock school? It’s hard to drive past Bowman without seeing at least five people chasing a Frisbee—no matter what the weather. Pope said that that’s not exactly the case. “We brag here at Fike about how many people come through the doors each day, but guess what—if you look at the entire number of the student body we’re not reaching very many. We’ve got a lot more work to do.” Pope wants to make those people her intended focus. “They might not have a problem now, but in 20 years they might. All those chips and chicken salad will add up.”

In the future, both Pope and Pinner hope to one day make this an actual accredited course for students from any major. Some ideas include designing this course to accompany the required freshman Library 100 class and tracking the progress of a student’s health throughout their four years at Clemson. “We look at their grades—why don’t we measure their health too?” Pope said. “You’re going to be able to use this stuff your whole life. All these skills are applicable.” It’s time to start thinking about the future—of your career yes—but more importantly your body and your happiness as well.
In the midst of normal classroom demands in primary and secondary schools, one objective often buried beneath the classwork is educating children on how to take care of themselves, whether the lesson regards their health, personal safety, or another aspect of their daily lives. Drs. John DesJardins, David Kwartowitz, Delphine Dean, Martine Laberge and Alexey Vertegel are leading Clemson bioengineering students in a collaboration with the Roper Mountain Science Center in Greenville, SC to develop nutrition, reproduction and biotechnology education modules for K-12 students. The Creative Inquiry team hopes to create a greater appreciation among younger students for science, technology, engineering and mathematics (STEM) fields through exposure to these innovative lab experiences.

“They’re giving us a great deal of freedom to innovate,” said DesJardins about the Science Center. “Our partnership with them is a wonderful opportunity to design and construct a bioinnovation exhibit with significant educational impact.” For example, the team is currently creating an exhibit focusing on concussions to emphasize the importance of cranial protection in sports and other activities. It will consist of a hands-on demo in which students drop a weight on the head of a boxing dummy and analyze the force it experiences with the protection of different helmets. After the demo, the children will have the chance to design their own helmets and test their effectiveness on the dummy. The exhibit will also contain a lesson plan designed to meet 7th grade learning standards for South Carolina so that the children can learn beyond the demonstration.

This Creative Inquiry project has given the undergraduates a creative outlet for exercising their academic skills outside of the classroom. In particular, they noted that the projects have pushed them to learn more coding and electronics skills that many bioengineering students have not employed within their major. They have taken on challenges outside of their familiar coursework to allow the project to grow.

The collaboration of this team with the Science Center has connected Clemson students to their community, giving the students the satisfaction of helping schoolchildren grow intellectually. These modules not only make the sciences more accessible to children and encourage them to expand their education, but also help Clemson students to do exactly the same.
An often-quoted African proverb says, “If you educate a man you educate an individual, but if you educate a woman you educate a nation.” Women have the power to shape the intellectual, and therefore economic, futures of their children, families and greater communities, but in many nations, they are not given the opportunity for an education. Dr. Elizabeth Adams of the Women’s Studies Program together with a group of passionate students have created a Creative Inquiry project devoted to raising awareness about the importance of girls’ and women’s education globally.

Melissa Moore, a sophomore economics major, recognized that the poverty issue faced by many nations can be greatly attributed to the degraded status of women worldwide. “Girls are completely untapped potential. If you want to improve everyone’s lives, you have to reach them and help them contribute to their communities,” says Moore, and her Creative Inquiry team, with the help of Adams, is committed to exactly this cause. Moore describes the work of Poverty Ends With a Girl as a “grass-roots effort,” with members of the team partnering with other organizations and departments who already have a presence abroad. This year, the team has reached out to Clemson Engineers for Developing Countries, Engineers Without Borders, and the nursing department to promote their cause in countries such as Liberia, Nicaragua and Haiti.

The team is also partnering with the Jane Adney Memorial School, a girls school in Kenya, to further their knowledge of girls’ education abroad. By asking the girls who attend the school to complete a survey detailing how their educational experience will impact their lives and goals for the future, the team can learn firsthand exactly how essential schooling is for girls and the potential they have to improve their own lives, and, in turn, their communities. The Poverty Ends With a Girl team also hosted a discussion awareness event as part of the International Day of the Girl in October, with topics ranging from maternal mortality to child marriage.

“If you educate a man you educate an individual, but if you educate a woman you educate a nation.”

According to Adams, it can become very discouraging to hear tales of the gender-based violence that is prevalent in much of the world. However, the dedicated students in her class give her hope and make her believe change is possible. “I’ve been teaching Women’s Studies for a long time and I have a hard time keeping myself positive, because progress is a little slow; the more I learn, the more discouraged I become. So this project has been fantastic for me, personally. Young people today are not only aware of the world situations in the world but also willing and creative enough to envision solutions to the problems we face and not just commiserate and complain. Seeing this happen is fantastic.”

The statistics that Adams and her team are all too familiar with are indeed disheartening. Moore points out a statistic from the book Half the Sky, which states “It appears that more girls have been killed in the past fifty years (as of 2008), precisely because they are girls, than men were killed in all battles of the twentieth century.” Further, the combined number of women who die from preventable maternal mortality each day is close to 800. It is issues like these that continue to inspire Moore to stay committed to this important project: “It’s more than just alleviating poverty; it’s a human rights issue.”

Adams’s students headed to the Justice Conference in Philadelphia in February, and were part of an audience focused on social issues. The Poverty Ends With a Girl team is passionate about improving the lives of girls across the globe, and they are determined to raise awareness about the important role educated women can play in alleviating poverty worldwide.
From just a short distance away, it looks like Sally and John are really hitting it off. Sally, a cheery blonde, wears a simple white dress and a dazzling smile. Soon it is time to order. Sally: a neat Mediterranean salad, light dressing, hold the cheese. John: steak, medium-rare, roasted potatoes and green beans. And for dessert? Well, they found out they have a mutual fondness for chocolate cheesecake. Destiny? Perhaps. How about they share a slice?

According to psychologists in the field of social cognition, there are many indications that Sally and John aren’t close cousins or coworkers from an important business meeting. When you look at their nonverbal communication, all the signs are there—but what was the biggest hint?

Dr. Thomas Alley and his Creative Inquiry team in the psychology department at Clemson believe that the answer lies in the food. Well, the sharing of food.

“People are way more likely to think people are attracted to each other if there is feeding,” Alley said. “Anytime somebody gives some of their resources to another person you’re likely to assume there is some form of intimacy.”

Alley believes that the idea for the project evolved about five years ago when he and a group of anthropologists were dining in Prague, discussing the different ways in which people perceive various eating habits—one of them food sharing. With help from a team of students, Alley then began a video research experiment. The 30 second videos showed two actors, one male and one female, eating together. In some videos there was food sharing in different ways such as the woman feeding the man and vice-versa. Food contamination was also taken into account such as whether or not a person had taken a nibble of something before offering it to someone else.

Students were then asked to rate how well the couple knew each other, whether the pair would grow closer or more distant over time, and overall, how much attraction there
Attraction seemed to be in the relationship. Alley said he was not surprised from the results. “If we saw food being transferred from one individual to another, that was an indication that these people were loosely involved.” Of the nearly fifty videos that were watched, and of the less than 20% “food-sharers,” almost 100% of respondents stated that sharing food—especially contaminated food—was a strong indication that the couple was romantically involved. It sure seems like Sally and John are off to a good start.

Based on this previous research, Alley and his team have done similar replications of the video projects as well as real-life observations. Students sat in dining locations in downtown Clemson and several other towns and anonymously observed couples who looked to be above the age of 18. “After they were done eating they would be approached and asked to fill out a survey,” Alley said. The survey consisted of questions asking about the nature of their relationship, and the results were strikingly similar to that of the video experiments.

But why? Alley believes that this behavior may be linked to our prehistoric ancestors. “Food sharing has had a major impact on survival” Alley said. “While humans were the hunter/gatherers, there was a constant need to provide for one another.” But interestingly enough, the gender of the food-sharer was something that did affect results. When the video experiment included a man feeding a woman, he was rated as being more attracted to her compared with the video of the woman feeding the man. Alley suggests that this might be due to the stereotype that men are the providers.

This behavior is something that has been observed in other species. “It is part of mate selection.”

And what about food contamination? Alley’s hypothesis is that it is similar to mouth-to-mouth kissing. “It’s kind of a test!” he laughed. “It’s to see whether or not there will be rejection or acceptance. It’s a good way to move the relationship forward.”

In addition to studying contaminated food-sharing, Alley and his team hope to also address other questions about this behavior. “It would be interesting to know whether or not the results are the same for people from different cultures and backgrounds,” Alley said. “Nobody’s really looked at this stuff before, but it’s important to think about how certain things impact what people think about each other.” From a short distance away, you can tell a lot about Sally and John. And with one bite, and an appetite for knowledge, we are learning more and more that communication is key.
Eleven students gathered weekly in a small classroom on the fourth floor of Daniel Hall. Their mission was clear: to bring nationally recognized, culturally relevant, award-winning fiction authors and poets to Clemson for the 6th Annual Clemson Literary Festival. Their work is establishing upstate South Carolina as a place where art is not only alive, but thriving.

“IT’s up to you guys.” Lecturer John Pursley’s words for his students ring true, and although he and Dr. Jillian Weise lead this Creative Inquiry project, the students are really in control. “The mission of the festival is that it’s by students for students, so they are involved in everything from the first brainstorm of events to the final execution of a three-day festival that features 16 events total,” says Weise.

Although the main focus of the project is on contemporary literature, students are given the opportunity to gain valuable experience in many different areas, including marketing, publicity, public relations and event planning.

The student directors were also responsible for selecting the authors that will be featured at the festival. During the fall of 2012, the students read material from a variety of sources, including print magazines, digital books and anthologies, searching for fiction authors and poets who sparked their interest.

They then each presented a writer of their choosing to the class, bringing samples of their work and basically stating their case for why this author should be included. “We ultimately vote, very democratically, on our roster of writers,” Weise says, and anyone who observes the interactions between the students and professors in this class will realize that this theme of democracy carries through to all aspects of the project. Everyone’s input is valued and significant, and students who remain quiet during a discussion will hear Pursley’s good-humored chiding: “You guys can chime in anytime here.”

This year, students developed marketing techniques and strategies to raise awareness about the festival beyond the
upstate. By partnering with students in lecturer Angelina Oberdan’s business writing class, the student directors developed a comprehensive list of possible locations within 120 miles of Clemson at which they can publicize the festival. Once the brochures and flyers for the festival were solidified, the students sent them out to coffee shops, universities, libraries and schools, hoping to appeal to literature-lovers from all over the Southeast.

Pursley and Weise are determined to help the student directors gain valuable real-world experience in the career fields they will eventually enter, and former student directors have gone on to work as editors of literary magazines, public relations executives and employees at other art festivals. And, being involved with the festival has inspired many students to just keep writing and polishing their own work.

Senior English and performing arts major Kat Clark was one of the student directors of the Literary Festival. She plans to go into arts administration upon graduation from Clemson, and feels that being involved in this Creative Inquiry "is a great opportunity to gain experience working with the community to plan events that promote the creative arts. Being a student director of the festival has given me an insight into fundraising, working within a tight budget, and how to utilize social media for promotion, among many other valuable skills for the future.”

Those who attended the 6th Annual Clemson Literary Festival undoubtedly had a hard time believing an event of this caliber was organized by only eleven students and two professors. The student directors, however, are a uniquely talented group with a passion for the arts which is manifested through their commitment to establish Clemson as one of the best cultural destinations of the upstate.

Jennifer Egan, Pulitzer Prize Winner

is the author of the novels The Invisible Circus, Look at Me, The Keep, and A Visit from the Goon Squad, which won the Pulitzer Prize and the National Book Critics Circle Award. She is also the author of a short story collection, Emerald City.

David Abrams is the author of Fobbit, a Barnes and Noble Discover Great New Writers selection. His stories have appeared in Esquire, Narrative, and The Missouri Review.

Holly Goddard Jones is the author of the story collection Girl Trouble and the forthcoming novel The Next Time You See Me. Her stories have appeared in The Best American Mystery Stories, New Stories from the South and Tin House.

Other featured authors: Bonnie Nadzam, Charles McLeod, Ben Mirow, Ariana Reines, Glenn Shaheen, and Eduardo C. Corral.
Haiti has seen tragedy in recent years in the wake of a devastating earthquake and epidemic of cholera, but a group of Clemson engineering students is working to revitalize the country. Clemson Engineers for Developing Countries (CEDC) is an organization based around a series of Creative Inquiry projects working to find solutions to sanitation and engineering problems in Haiti. At the same time, students apply hands-on experience to their classroom knowledge.

CEDC has grown from a handful of students in one project in 2009 to several hundred students spanning eight Creative Inquiry projects. The projects involve designing engineering solutions to problems encountered in Haiti, and then sending those solutions to Haiti along with student interns for implementation.

“We basically started in on the water project, oversaw the construction of a new dam, put in two new turbine pumps and built pump houses, laid about 8 miles of piping and built a filter building and installed all the filter equipment at the top of the mountain,” said Dr. Jennifer Ogle, who joined CEDC as a faculty adviser and Creative Inquiry mentor in 2012, and has since helped the students send solutions and interns to Haiti.

Students have worked in Haiti’s Central Plateau, the area where Haitians living on the coast fled after the 2011 earthquake. Surrounding this region are hundreds of small villages, many of which are in dire need of a clean water source.

“Right now, the majority of the water that these outlying villages use is surface water,” explained Ogle, “and because of the lack of sanitation, the surface water has cholera and all sorts of nasty specimens in it. The water is not clean in any way, shape, or form.”

Clean, drinkable water is vital for a community to remain healthy and self-sufficient, and the CEDC has been able to provide much of the technology that is needed for the country’s villagers. Triage systems, microfilter units and UV sanitation units have been installed to create clean, drinkable water from any source.
“The stresses of paperwork and stuff that has to go on to get there can be stressful and makes me want to quit, but when I sit back and think about what great things the students are doing, it kind of makes it all worth it.”

CEDC does not send the equipment to Haiti alone, though. Due to a lack of skilled construction labor in Cange, many projects that are sent without any management will not be completed. CEDC sends student interns to Haiti to ensure that the systems get built properly and no corners are cut.

“They know how to read the plans, they know construction techniques, they know scheduling, they know how to pull crews together,” said Ogle. “These kids are literally leading Haitian men that are sometimes twice their age, so it’s a really interesting dynamic to see how they’re working together.”

While Ogle and one other industry advisor work with the Creative Inquiry team, they try to remain as hands-off as possible to allow for student direction. Outside of the necessary paperwork that comes with international missions, the students are the real leaders of the clean water initiative.

They come out of the CEDC Creative Inquiries with real world experience, leadership skills and interaction with another culture that will benefit them as they move on within and outside of Clemson.

“Working on international projects is demanding for all involved, but Ogle enjoys the work at the end of the day, and the CEDC students are always up to the challenge.

“I love it—this is one of the most fun things I do at work,” Ogle said. “The stresses of paperwork and stuff that has to go on to get there can be stressful and makes me want to quit, but when I sit back and think about what great things the students are doing, it kind of makes it all worth it.”
With the world’s second largest economy and a focus on technological innovation, Japan is a country with its eyes set on the future. Therefore, it is no surprise that Clemson students from all majors are investing their time in studying the language of this island nation.

Yet there is one hurdle that has discouraged many students from furthering their Japanese education. Kanji, the Japanese writing system adopted from Chinese pictographs, is especially difficult to learn. One Creative Inquiry team has found a way to cater to American students’ way of learning and make studying kanji more accessible. Associate professor Toshiko Kishimoto and her Creative Inquiry team are working to create an application for Android phones that will bridge the gap between U.S. college students and thousands of kanji characters.

While other kanji applications are available (such as Kanji Flip, KanjiPop, and ShinKanji), the Creative Inquiry group found that the weak point of current resources is that they teach kanji the way one would teach Japanese children in Japan. A new method is needed to connect American-born students to this essential element of the Japanese language.

Ian Moore, a senior mechanical engineering student who grew up learning Japanese, pointed out that when learning Japanese “probably 80-90 percent of the struggle is learning kanji.” James Wells, a junior computer science major who has studied the language for five semesters, stated that they are “trying to get [students] through the 101 and 102 levels to get people past that [kanji] barrier.”

In 2012, the group participated in the International Conference of Japanese Language Education (ICJLE), where they presented their project in Japanese to educators from Japan. Professors and publishing executives were interested in the extensive research they had conducted. This opportunity allowed them to learn that many Japanese educators were bewildered as to how to teach kanji to Americans who do not live in Japan. The students had researched how to teach kanji to Americans by conducting surveys at universities such as Notre Dame, Georgia Tech and the University of Southern California. They found that outside of class most students study 15-30 minutes at a time; on average students studied 3-4 times outside of class per week. This mobile app will make it easier for students to study after class.

Their final goal is for the app to be advanced enough to prepare students for the Japanese-Language Proficiency Test (JLPT), which tests students’ knowledge of about 2,500 kanji characters. From the survey, Moore pointed out that “one inspiring piece of data is that once somebody gets to know about 200 kanji, there is a huge spike in their kanji knowledge. Getting from 200-400 isn’t as difficult as getting from 0 to 200.” After about 3 semesters, the average student knew 150 characters; and by the fourth semester more than 300 characters had been mastered. The team presented at the Southeast Association of Teachers of Japanese in March 2013 and created a functioning app by April 2013. Moore believes that this project will motivate students to support the Japanese language program. “If someone can go in to learn Japanese, and not see learning kanji as being a barrier, we will probably have a higher retention rate.”
Throughout their curricula at Clemson, many students find themselves required to take at least one calculus class to earn their degrees. While these classes are useful, many students will drop the courses (and subsequently change their majors) or simply will not understand how the math is applicable to their fields of study. Drs. Ellen Breazel and Marilyn Reba of the mathematical sciences department are developing a Creative Inquiry focused on calculus in biomedicine that gives a practical application to biomedical math. The Creative Inquiry itself is part of a larger group of four Creative Inquiries funded by the National Science Foundation, each with a separate focus on orthopedics, disease epidemiology, health hazards from arc-flash and mammography and radiology. Their goal is to give students a larger picture of the purpose of calculus outside of the classroom.

“Our hope is that they have a renewed sense of applications toward their calculus in particular,” stated Breazel. The students in the Creative Inquiry are given background information in epidemiology and then follow the information with hands-on activities using models and games. The Creative Inquiry moves beyond classroom activities by including visits to the Center for Disease Control, orthopedics lab and Greenville hospital system, giving students the opportunity to speak with professionals working in these environments. Reba said, “We are also excited that our students, through projects produced in this Creative Inquiry course on Epidemiology and Calculus, are contributing to the development of an interactive instructional mobile app to be downloadable on iTunes.”

The Creative Inquiry has managed to make calculus more tangible to the students, and the possibility of expanding the program seems very likely. Currently, Breazel and Reba hope to expand the program to other concepts such as computer science. Other universities, including Georgia Southern, Emory and UNC Wilmington have shown interest in doing their own modules. With these movements toward practical applications of math, calculus seems to be working its way toward becoming a more popular subject among students.
The roar of the crowd is deafening. Blurs of speed flash by as the racecars zoom around the track below at over 200 mph. One blur stands out in particular, though, because of its distinctive coloring and a giant tiger paw on its hood – it is NASCAR driver Mike Wallace’s racecar and it has been Clemson-branded, thanks to lecturer Amanda Cooper Fine’s Creative Inquiry class.

What started out as a simple conversation between NASCAR driver Mike Wallace and the Clemson alumni office turned into a full-scale venture with a goal of obtaining a one-year sponsorship for Wallace’s Ford EcoBoost 300. Cooper Fine, a Clemson MBA graduate and lecturer of marketing, was recruited to lead a Creative Inquiry project devoted to this goal due to her prior experience in sports marketing.

Senior marketing major Tyler Reinhard explains the motivation behind the project: “Mike gets to use us college students with our unique and creative minds; we aren’t jaded by the sports industry, so we can have some brilliant ideas. And it works out for the school to get their name out there more.” While other colleges have partnered with NASCAR before, it has always been on the engineering side of racing. Cooper Fine explains that Clemson is the first to partner with NASCAR from a marketing standpoint, and everyone is interested in seeing how the partnership will unfold.

The team’s first semester goal was to create a Clemson-branded car and cover Wallace’s costs for one race, the final race of 2012 in the Nationwide series in Miami. While the team wasn’t able to generate the funds to cover the costs (which are close to $170,000), they learned a valuable lesson about the successes and failures that take place in real-world business ventures. The team is now focused on securing sponsorships for the car and spreading the word about the project through social media and other marketing avenues.

Junior marketing major Ellen Fitzgerald was attracted to this Creative Inquiry because it provided the potential to interact with companies and make contacts that would serve her well in her career. “I think it’s really unique for college students to get this type of opportunity, and we get
real world experience with trying to obtain a sponsorship, market the brand, and the one-on-one contact with Mike Wallace. So, a lot of people we’ve talked to think it’s an amazing opportunity for us and kind of want to see the storyline of what we do and where it ends up.” Fitzgerald and the other students are working with both the Clemson Alumni Association and firms associated with The United Service Organizations (USO) to bring the cost of the car down in time for next season’s races.

For Reinhard, the experience has been nothing short of eye-opening. He has been able to see firsthand what it takes to market a national sports event, delving into such details as efficiently pricing every square inch of advertising space and using the right words during social media blasts. He was in charge of executing the entire social networking initiative leading up to Wallace’s “meet-and-greet” during the Clemson-Georgia Tech game to promote his company JD Motorsports last fall. He managed to obtain coverage from ESPN and a couple of local news channels for the event. It hasn’t been all work and no play, though. Thanks to Wallace, he was able to watch his first race last fall in Charlotte. “I was also granted pit access, making the experience a memorable one,” says Reinhard.

The experience of leading this course has been bittersweet for Cooper-Fine. While she has been glad to see her instruction being applied to a live project, she often becomes discouraged seeing her students fall tantalizingly short of their eventual goals, as was the case during the first semester. However, she maintains that it is good that her students experience such disappointment in the classroom setting, so that they are prepared for their eventual work places. The Creative Inquiry’s motto, “Driven Tigers finish first,” is inspiring their commitment to their project and leading them to always push for a successful finish.
Four days out of the semester, Cox Plaza, the courtyard outside of the Student Union, is buzzing with the hubbub of local farmers filling tent-canopied tables with farm fresh fruits and vegetables, gourmet hot sauces and homemade textiles and soaps. From an outsider’s perspective, it would appear that this market is professionally organized and managed, however many are surprised when they discover that the Clemson Farm-Fresh Market is actually an entirely student-run production.

The Clemson Farm-Fresh Market began with the inspiration of a student named Ashley Adams, who held a passionate interest in starting a farmers market to serve Clemson’s campus. Adams, who grew up on a farm, wanted to share the benefits of her experience with fellow students. Adams co-authored a grant with the help of Student Services within the College of Agriculture, Forestry and Life Science, and was awarded funding from the South Carolina Department of Agriculture. With this grant, the farmers market began.

Since 2009, the market has developed into a Creative Inquiry project, employing the innovative ideas and critical thinking skills of students in order to expand its reach and increase its presence on campus. Like all Creative Inquiry projects, the Clemson Farm-Fresh Market initiative has a faculty mentor who oversees the course. Dr. Angela Fraser of the food, nutrition, and packaging science department explains that the focus of this program is student responsibility.

“Nicole Schutte is the student market manager,” Fraser said. “I think that needs to be emphasized. I’m the faculty member who comes in and kind of solves problems as needed, but this is truly a student-run project and Nicole is the lead of the project.”

For the past two years, Schutte has led the Clemson Farm-Fresh Market in growth and transformation, passionately designating student tasks while balancing her own...
responsibilities. Student members of the Creative Inquiry have different roles, including vendor coordination and recruitment. The Creative Inquiry also has a media team which is responsible for Facebook and Twitter promotions. The Creative Inquiry places specific focus on food safety, ensuring that all vendors are in compliance with food safety regulations. Schutte manages the execution of these tasks.

“I oversee all of that, and try to stress to everyone that is on the team that for the vendors, this is their livelihood,” Schutte said. “They’re bringing their business to Clemson and providing a service to us, and they’re also trying to make money, so we need to do everything that we can to help them and everything that we said we were going to do.”

“My ‘dream big vision’ would be that there would be a permanent structure for the Farmers’ Market somewhere on campus,” Schutte said. “I think that we’re such an agricultural school that it would be really neat if we had something like that. A permanent structure would make it easier to host more frequent markets, and markets during the summer for the community when not as many students are around.”

The Clemson Farm-Fresh Market Creative Inquiry has become an example of the drive Clemson students have to turn a class into an actual business venture. Currently, the Farm-Fresh Market is open during the months of September, October and April. For the Creative Inquiry team, expansion of the market to a permanent structure benefiting Clemson’s campus is not just a dream, but a realistic plan for the future.

“I feel like I’ve gained a lot of experience with what it takes to actually run a business. It’s a lot of keeping other people in the Creative Inquiry happy, keeping the vendors happy, marketing and advertising. There’s so much more that goes into it than I ever thought would have when I went to the market the first time as a customer. I really think it’s like running a mini-business.”

The Clemson Farm-Fresh Market has provided the students involved with valuable learning experiences, not only in the classroom through planning for the market, but with real-world business experience.

“I feel like I’ve gained a lot of experience with what it takes to actually run a business,” Schutte said. “It’s a lot of keeping other people in the Creative Inquiry happy, keeping the vendors happy, marketing and advertising. There’s so much more that goes into it than I ever thought would have when I went to the market the first time as a customer. I really think it’s like running a mini-business.”

This student business has been extremely well-received by the Clemson community and continues to grow each year. Each market day of the semester, students turn out in crowds to enjoy the vendors who visit campus to sell their products. Vendors and students alike enjoy the presence of the market, which gives students an opportunity to learn about the origins of their food. While the market currently only operates four times a semester due to limited funding, Schutte has big dreams for its future expansion.
a fruit juice for a cure

By Amber Day & Michaela Reinhart

Each day we hear about a new potential cause for cancer; from cell phones to microwave meals, it seems that the threat of the disease is all around us. But what if something as simple as a fruit juice could not only treat cancer but also provide people with a preventative defense against its ravaging effects? Clemson biological sciences professor Dr. Yanzhang (Charlie) Wei and a group of undergraduate students are partnering with research groups at the University of Hawaii to test the juice of the noni fruit for such anti-cancer properties.

The noni tree (Morinda citrifolia) grows mostly in Southeast Asia, but can be found in Hawaii as well. Clemson’s Hawaiian partners are responsible for preparing a derivative of the noni fruit juice called Fermented Noni Exudates, or fNE. Under Wei’s guidance, Clemson students are testing fNE for anti-cancer activity.

Using an in vitro cell culture system, students involved in this project test over twenty different components that are isolated from fNE. The students investigate the compounds for anti-cancer activity in two ways: first, they test to see if the compound has cytotoxic properties, which would give it the ability to kill cancer cells in a way similar to a chemotherapy drug; and second, they test to see if the compound can act as an immunomodulator by activating the immune system to fight cancer. By using an animal model, the group has made the exciting discovery that noni fruit juice does indeed demonstrate anti-cancer activity.

Wei explains that the scope of this project is quite vast. It has been in process since 2006 and three publications have already been produced. And, the project is receiving attention nationally and globally, as several labs in both the United States and overseas have expressed interest in research collaboration with Wei and his team. The partnership between Clemson and the University of Hawaii is essential to the project, as the noni tree is not native to South Carolina.

Students who are involved in this Creative Inquiry get hands-on experience in a research lab. They are involved in every aspect of the research, from experimental design to data collection to explaining their findings in a report and then presenting the results at conferences locally, regionally, or nationally. Wei is committed to helping students learn the necessary skills to be able to conduct their own independent scientific studies. He prefers that students stay involved with the project for at least two semesters to ensure that they receive plenty of experience in the lab. Student Rob Borecki feels that the work he is doing on this project will directly help him in his future endeavors: “Research has been a great way for me to apply what I am learning in the classroom to real-world problems. As a pre-med student, this research also allows me to understand and be a part of the work that goes into finding treatments and cures for diseases.”

“Research has been a great way for me to apply what I am learning in the classroom to real-world problems.”

Noni juice has demonstrated many beneficial health properties, including anti-inflammation and antiangiogenesis effects. The complexity of this project causes research to move slowly and carefully, so although the team hasn’t yet found any direct links to other diseases in the juice, it is possible that they will as their research continues. Wei explains that the most exciting discovery so far is that fNE has been demonstrated as a cancer preventative agent. The team’s purpose becomes clear in light of this discovery: “Our goal is to manipulate this juice and get people to drink it to prevent cancer from developing. That would be amazing, right?” Amazing it would be, indeed.
Clemson students are surrounded by opportunities for educational experiences and campus involvement, so much so that the routine of going to classes, attending organizational meetings, and rushing amidst a packed schedule to make the intramural game the same night is typical. However, not all children may attain this point in their education; for some, high school graduation may not become a reality for them. One Creative Inquiry, currently in its final semester, is dedicated to providing a program for children at risk of not completing their education. Lecturer Laura Shick of the mathematical sciences department has been crafting a program with a Creative Inquiry team for these children who do not have the opportunity to participate in programs that promote their educational and social development. The students who joined the Creative Inquiry team realized that an after school program would be most ideal, as it would provide closer and more frequent interaction between the students and children.

The program has now expanded from the meetings with a few children in the small front office of Creekwood Village Apartments in Clemson to about ten or eleven children at a church a few hundred yards from the complex. Clemson students meet with elementary and middle school students three days per week, during which they play games, work on homework, and provide snacks for the children. They have dinner on Thursdays and seek to provide the children with extracurricular experiences, including going to basketball games and attending events at the Brooks Center for the Performing Arts. They have even created “SWAG club,” which stands for “Students With a Goal” and encourages the children to “speak kindly, work hard, always love, and give respect.”

Shick explained, “Research has shown that if children have mentors and... goals in middle school, then you stand a really good opportunity to keep them. If you lose them in middle school, they’re gone.” Through the program, the children’s willingness to learn has increased, and their social skills have developed. Two elementary school children, for example, had a speech development issue and are now speaking more frequently to the student volunteers. Such interactions will hopefully encourage these kids to graduate high school and pursue degrees in higher education. One Clemson student, Hannah Swoap, is mentoring a high school student to help her understand the process of applying for college. She is able to provide resources to the student that are unavailable at home, giving her advice on the application process and encouragement to seek higher education.

The greatest challenge for the Creative Inquiry team was getting the program into operation. The students had to work with regulations and policies, liability issues and health issues. “I definitely think all of us have grown in our leadership capabilities because now we’re actually running the program,” stated Swoap. “I’m learning what it takes to run an organization. It forces you to grow and learn and do things I wouldn’t have learned just sitting in class.” The fact that the students in the Creative Inquiry come from a variety of majors such as early childhood education, sociology and civil engineering emphasizes that they are truly working outside of their classes. As the project comes to the end of a semester, Shick, Swoap, and the other students hope to make the program sustainable by making it a community initiative. They hope to establish a program through which volunteers outside of the Clemson student body may be trained to continue the program as the Clemson volunteers graduate. The community effort to provide these children with mentors and the motivation to form goals will influence their future education. In the long term, the program could increase the high school graduation rate and lead to an educated work force and improved economy. An investment in this program would undeniably be an investment in the future of the community.

By Michaela Reinhart

“Joining the SWAG CLUB”

Fall 2013
What is health? By Merriam-Webster’s definition, it is “the condition of being sound in body, mind or spirit, especially, being free from physical disease or pain.” A large number of people understand this concept and know how to ensure their health, even in the most basic ways. However, an even larger number of people do not. Three years ago, the people of a rural village in Guatemala might have identified as the latter. Thanks to the work of Dr. Roxanne Amerson, the students from her community health class and a Creative Inquiry group, this small town in Guatemala is becoming more educated on the basics of good health.

Stemming from her travels to Guatemala to teach health, Amerson wrote a grant proposal to receive funding for health education in the community. With the help of Grace Wielicki and Joellen Spicer, two seniors in Amerson’s Creative Inquiry group, the proposal was submitted to the National Institute of Health (NIH), and awarded funding for the project.

The funding provided will be used to develop a curriculum for the health education program in a rural village in Guatemala. Before developing the curriculum, Amerson and her team needed to better understand the culture and literacy level of the people by doing a community assessment. Amerson knew the importance of this assessment and, through reading other studies, had stumbled across the idea of creating a visual map of community resources and key facilities (also known as data mapping). Other researchers had used survey equipment to create graphic representations of communities. Amerson and her Creative Inquiry students began brainstorming about how to develop the same type of visual maps for their community in Guatemala.

Last fall, Wielicki and Spicer traveled with Amerson to Guatemala to begin the community mapping process which entailed mapping the coordinates of the clinics, pharmacies, casarios (villages) and water sources. The only map found in the area was hand drawn with markers, so the team had to get creative and develop a more accurate and efficient way of mapping the community. Using an iPhone and Google Earth, Wielicki and Spicer traveled to the different casarios, mapping out the rural community by dropping and labeling pins at the various locations. The completed data map shows the spread of the casarios, the resources available to the people and the number of people living in each area. The map not only shows the need of health education and resources but also ensures that Amerson and the Creative
Inquiry group are able to educate people from all the regions.

Now that the initial data mapping is completed, Amerson and her co-investigator, Dr. Rachel Hall-Clifford, have conducted interviews and focus groups to expand their knowledge of the eight regions so that the curriculum can be developed to suit the needs of the people. In July, Amerson will travel to the rural village to present the curriculum to twenty women from various regions in the community. Those twenty women will in turn go out and educate ten families within their community, spreading the health education throughout the area.

“The potential difference that there is to be made is astronomical. If it is something that we can teach them about, and that it really can make a difference, the health of the entire community could change.”

Through this Creative Inquiry, the students have been faced with many challenges, allowing them to combine what they learned in the classroom with critical thinking. Traveling to Guatemala has not only challenged Wielicki from an educational standpoint but has given her an appreciation for third world countries, both of which Amerson had hoped for her students when she began the Creative Inquiry. For Wielicki, the most exciting aspect was being able to see and imagine the impact that the program could make. “The potential difference that there is to be made is astronomical. If it’s something that we can teach them about, and that it really can make a difference; the health of the entire community could change.”
restoring a university landmark  By Jeff Kinnison

One of Clemson’s lesser-known but unique landmarks is a Foucault Pendulum, a device that tracks the Earth’s rotation. In the past ten years, though, the pendulum has stopped swinging. A team of Creative Inquiry students has taken on the task of getting it working again. Clemson’s Foucault pendulum is the only one of its kind in South Carolina. It hangs three stories high in a shaft adjoining Kinard Laboratory. In the 1960s, Dr. Albert Reed, a Clemson physics professor, designed a revolutionary mechanism to make the pendulum self-sustaining, but age caught up to the device and it came to a halt.

In the fall of 2012, Jared Williams, Edward Bell and other students made a scale model of the pendulum and made it functional. They decided to apply what they had learned in making the scale model to the full-sized pendulum. “It started as a class project where Eddie and I wanted to build a scale model and get the electronics working,” said Williams. “The pendulum, if you just let it swing, will die out eventually. So we put magnets underneath it and we pulled it at the right time. Back in the day they used analog electronics, so our goal is to take it, digitize it, use a microprocessor to monitor the whole thing.”

The team developed a plan to modernize the electronics used in the pendulum’s design, including monitoring aspects of its swing, such as velocity and period. That data will be used to maintain the pendulum and will be sent to a website for analysis and use in physics classes. The team received $68,000 of funding from Clemson Undergraduate Student Government’s Capital Improvements budget on Feb. 4 to refurbish, upgrade and maintain the pendulum. The group plans to have it running by May 2013, and to finish work on it by fall 2013, at which point the physics department will take over maintenance.

“The physics department is going to roll it into coursework,” said Dr. Chad Sosolik, the project’s faculty adviser. “It’s sitting right outside, and you can look at the data. At that point we’ll know what a Foucault Pendulum does, because we’ll have seen it in action.”

The mid-19th century textile industry of South Carolina has always been regarded as one stuck in an era of low productivity and stagnating production. Economic historian and professor Dr. Howard Bodenhorn, along with his Creative Inquiry class investigating the industry between 1880 and 1960, begs to differ. Existing studies of productivity growth in manufacturing assert that southern textiles were a stagnant, low-growth sector. Bodenhorn’s team finds that total factor productivity growth - a measure of technological innovation - increased by 4.2 percent between 1929 and 1942 and by 7.0 percent between 1942 and 1949. South Carolina’s mills were vibrant places. The driving force? Bodenhorn claims it was the introduction of synthetic fibers by companies like DuPont. Introduction of these materials not only implied more mass produced comfortable clothing, but also led to stronger threads that could be processed by faster machines. This Creative Inquiry project began with an overview of the economic history of South Carolina and then focused on the rise and fall of its textile industry. It also delved into the lives of the textile mill workers and how their fortunes correlated with that of the factories.
In order to arrive at their results, Bodenhorn’s researchers used a composite measure for labor, aggregating across male, female and child laborers, utilizing their respective marginal products as weights. This allowed them to measure changes in effective labor utilization over time, allowing for more accurate results.

Connor Fleck, a senior among the five students taking the class, feels that the experience allowed him the hands-on experience in quantitative economics that he would not ordinarily have as an undergraduate. Moving on from Clemson, he intends to use this as a platform towards his aspirations of a graduate degree.

As the supervisor for the entire project, Bodenhorn seemed delighted in reliving moments spent interacting with his class. “Data entry is not fun, but the kids did it without complaining and got the job done.” The team is now in the process of presenting the research in the form of an academic paper co-authored with Bodenhorn, who intends to submit the paper to academic journals in due time.

According to Bodenhorn, the textile industry was an integral part of South Carolina’s history and economy and merits extensive study. Given the exciting new results emerging out of this Creative Inquiry, it seems that this was a semester well spent by the students.
education now,  

opportunity forever

By Amber Day

The opportunity to receive an education is often taken for granted by American students. In places like the Central American country of Belize, education is desired and respected, but isn’t a realistic possibility for many children. A project that was proposed in Dr. Sean Williams’s business writing course has evolved into a Creative Inquiry called $60 Scholarships.

The idea driving this non-profit social enterprise is “education now, opportunity forever,” and the students involved in this Creative Inquiry are committed to and passionate about creating such opportunities for children in Belize. Unlike America, Belize does not have a fully government-funded education system. While the Belizean government does finance half of students’ yearly educational costs, families are responsible for the other half. And, in a country teeming with poverty and unemployment, many families cannot afford to send their children to school. For $60, a student can attend school, receive books and supplies, as well as a uniform.

The team behind $60 Scholarships is made up of both English and business majors, with students taking various roles in finances, operations, communications, marketing and social media. At the beginning of the fall 2012 semester, the team set a goal of raising $5000 for Belizean children. In just a few short months, the team was able to meet a third of their goal, giving 30 children the gift of education. The $60 Scholarships team partnered with the University bookstore at the end of the fall semester during textbook buy back weeks. Students set up tables to promote the organization and also to ask students to donate the money they earned from selling their textbooks to help send a Belizean child to school.

Although the team has seen success in their endeavors so far, senior English major Kellie Hawkins describes one main challenge the group has faced: “Clemson already has so many philanthropic organizations that it’s hard for our small group to squeeze in there. It’s really hard to ask college students to become part of it because everyone is struggling for money. Our team immediately fell in love
“Our team immediately fell in love with the concept for the project, and we just want other people to share in that passion with us.”

with the concept for the project, and we just want other people to share in that passion with us.” The group has promoted their cause through a strong social media presence, tabling on the library bridge and fundraisers, and the results have been positive.

The team also partnered with crowd funding organization SponsorCraft in order to raise funds for a spring break trip to Belize, during which they visited the children and teachers at Unity Presbyterian School. The team produced a documentary of their trip, which includes footage from the school, the Burial Grounds area of Belize City and the part of the city where many cruise ships dock. “We wanted to portray the view that tourists get of the area versus the reality of what goes on beyond the cruise ports,” said Hawkins.

On the final day of the trip, the team presented a check for $1800 ($3600 in Belizean dollars) to Pastor Ernest Betson, the principal of the school. The children expressed their gratitude with thank you cards, bracelets and songs for the team. The team was also able to include several interviews with teachers, parents and faculty members in their documentary, which will give viewers a chance to see firsthand the poverty in Belize.

Dr. Sean Williams is the faculty leader of this project, and he explains that students in this Creative Inquiry are gaining knowledge of the important role that writing and communication play in a business context. “The students have learned that if you can communicate an idea really well, you can have an impact. They’ve seen that in action.” While this year has been devoted to raising awareness for the project’s cause and receiving donations, Williams points out that next semester phase two of the project will begin.

“We want to be a sustainable operation and not rely on donations which means we have to develop an enterprise that supports that.” The group will begin plans for a business model that supports their philanthropic activity in the fall of 2013 with hopes of taking their Creative Inquiry project to the next level.
By Marissa Kozma

At the break of dawn before classes begin, wildlife and fisheries biology graduate student, Cady Etheredge, and her fifteen-student Creative Inquiry team climb into a Clemson lab van and drive along a bumpy dirt road to the old agriculture center on campus where the outdoors are the classroom. In their waders and jackets, they grab their equipment and trudge through mud and swamp water to the same parts of the forest they revisit every week.

Why? To find and study raccoons—which are a vital component to Etheredge’s created experiment that she and her students are researching. But it’s not just raccoons that Etheredge’s focus is on—they are also studying coyotes. “We want to know if raccoons are more vigilant in coyote presence because that tells us raccoons view coyotes as a threat, and if they view them as a threat, then it might make sense to leave coyote populations to bring down raccoon populations,” Etheredge said. There appears to be more coyotes when there are less raccoons, so the goal is to figure out why. Etheredge and her team conduct this research by trapping raccoons in enclosures containing coyote scat treatment that the students mix from a facility in Utah, and watching to see how the raccoons react by watching their behavior on hidden cameras. Etheredge believes that this experiment will show if the presence of a coyote ultimately impacts the raccoon’s behavior by watching the footage to see how much corn and how many sardines are eaten, and whether or not other raccoons show up and for how long they stay.
Etheredge also believes that the overpopulation of the coyotes might not be as negative as one might think compared to other instances of abundant species in history. “We used to have red wolves here [in Clemson], but after European settlement we basically eliminated all of them. We can’t really get red wolves back, and we can’t get rid of coyotes, so we’re wondering if coyotes might fit in that red wolf niche in that spot in the ecosystem.” Matt Kynoch, a senior also studying wildlife & fisheries biology, feels that eliminating coyotes is both unnecessary and detrimental to nature. “There’s a lot of push right now for coyote removal because the SCDNR (South Carolina Department of Natural Resources) encourages hunters to shoot coyotes. Hunters see coyotes as competition, but it’s not like hunters are trying to restore balance, it’s just that they want to remove that competition.” By studying the effect coyotes have on the raccoons, Etheredge and her team will attempt to analyze how the coyote overpopulation is affecting the ecosystem, and whether or not their presence is influencing raccoons, and perhaps other animals such as quails and turkeys.

Although it requires a lot of hard work and some early mornings, Etheredge’s team experiences a lot of fun times, and all of her students rate their exposure to the outdoorsy project as very influential in terms of their ideal future goals. Junior Olivia Souther says that studying the raccoons in real life has taught her more about research than any classroom lecture. “You don’t know how research works until you do it yourself. I learned how frustrating it can be, but also how rewarding it can be.” Trudging through the mud at 7 a.m. is worth it—nature is both the teacher and the classroom and Etheredge’s students have had much to learn from it.
It is a unique experience when a student is able to expand the curriculum of his or her own field, and Dr. Heather Dunn of the department of animal and veterinary sciences (AVS) has led a Creative Inquiry project that gives students just that opportunity. The field is in ruminant anatomy, the eventual outcome will be a textbook, and the information compiled is the first of its kind.

The purpose of the project is to compile a volume of ruminant images and diagrams, a field of animal veterinary sciences that is currently underdeveloped. Ruminants are animals with four-part stomachs, and many can be found on Clemson’s local farms, including sheep, goats and cows. And, ruminant anatomy remains a vital subject in the field of animal veterinary sciences, especially with the growing demands of American farms and farm animal health. But, not all major universities and academic institutions have access to such animals, which makes Clemson an obvious choice to pave the way in expanding the area of study.

Dunn is an obvious choice to lead the Creative Inquiry. The plan to create a ruminant-specific textbook for veterinary science programs is familiar territory for Dunn, who has already helped create an anatomy textbook on other animals for veterinary technology programs. The textbook is composed of animal images and diagrams for veterinary study, and operates as a sort of photographic atlas on the different kinds of animals. However, a ruminant-specific textbook has yet to be published, and it is an academic gap in the veterinary field that needs to be filled.

“The whole driving force behind all this is that we have fewer and fewer people that are born and raised on farms,” explains Dunn. “No one has this large animal experience. Somehow we have to keep up and keep our food supplies safe, so that’s our big picture.”

The work behind the Creative Inquiry project focuses on image compilation and anatomy identification, tasks that find the students of the team photographing and labeling
the different organs and bone structures of ruminant farm animals. It is a multi-step process from first images to final publication, and those involved in the project have been a part of it all. “First semester, we actually started out with the animal dissections,” says Dunn. “Then, we were collecting tissue, making the slides, staining the slides and taking the pictures.”

Images are not the only information being compiled into the textbook; x-rays, drawings, dissections and bone diagrams will also be included to give the full and necessary spectrum of ruminant anatomy. Handling techniques are also being investigated by the Creative Inquiry team, and many of the students have taken pictures of other AVS classes out in the field working with live animals.

Dunn hopes that this project will shed light on the creation and production of textbooks vital to the sciences, and that the students will incorporate their newfound knowledge in further pursuits. “When they now open up a textbook, they have a lot more appreciation for all the work that goes into the pictures. They’ve put all of this information together that they’ve been hearing about and are able to use it,” she explains, reiterating that the students have been a major force in the inquiry’s progress.

“The real goal, however, is to further knowledge of ruminant anatomy and to provide access to schools that do not have ruminant information readily available. “Let’s educate more people with large animal anatomy, even people at schools that don’t have it,” Dunn says, explaining that AVS students will be able to work more knowledgeably with these animals when they move into veterinary schools or farm management.

The Ruminant Anatomy Creative Inquiry team is contributing an important service to the veterinary field, providing much-needed anatomy information to the animal and veterinary departments. Thanks to Dunn and her team of AVS students, schools and programs across the nation will be able to utilize accurate and up-to-date ruminant information in their future curricula.”
facilitating an authentic connection

By Amber Day

Guided by a philosophy that states, “Learning should take place wherever, whenever, with whomever, and however best facilitates an authentic connection between student, faculty, and content,” the EDGE program in Clemson’s department of parks, recreation, and tourism management (PRTM) is giving students the opportunity to take the knowledge they’re learning in the classroom and put it to use in very practical ways. EDGE is an acronym signifying “Engaging in Diverse Guided Experiences.” The PRTM EDGE program was developed and implemented by a team of PRTM faculty members which includes Denise Anderson, Betty Baldwin, Bob Brookover, Fran McGuire and Teresa Tucker. The idea for the program emerged through an analysis of the department’s curriculum, which led to the discovery that many of the concepts and topics being discussed in various core classes overlapped and intermingled. But, instead of students taking a set of classes in which they build upon knowledge gained in previous courses, the system was somewhat disorganized. This disorganization led the PRTM faculty members to question the system and ultimately ask: how can we do this better?

The initial answer to this question came in the spring of 2010 with a program called IMMERSION, which eventually developed into EDGE program. By having students enrolled in 4 core courses that served as a 12 hour credit block the curriculum became much more streamlined. Students participate in the EDGE semester during their sophomore year. In order to carry out the philosophy of giving students hands-on learning experiences, EDGE formed a partnership with Creative Inquiry. Students participate in a Creative Inquiry project for four semesters, beginning with their first semester of EDGE. They are presented with a list of projects that faculty members are interested in leading and are asked to rank their top three choices. While it isn’t necessarily feasible to give each student their top choice of project, the program coordinator does her best to enroll students in the projects in which they are interested.

During the first semester of EDGE, students learn in their Creative Inquiry project the ins and outs of research methods, data collection, and receive an initial introduction to the topic of their project. The next semester is dedicated to more in depth work on the project, including narrowing down the research question guiding the project, and then actually conducting the research and writing up a report detailing their findings. Much of their research focuses on topics such as finance, leadership, marketing and event planning, which directly relates to the work they will eventually do in their respective fields. The students also get the chance to take a trip to various locations throughout the Southeast to meet with professionals in different related fields.
fields. This opportunity gives students the chance to see how research is being used in the field and the challenges that professionals face, even if it isn’t directly related to their project.

One particular Creative Inquiry that is part of the larger EDGE umbrella is called Finding Your Voice, led by PRTM graduate student Kate Evans. Finding Your Voice is a residential weekend camp for 11-12 year old girls. The camp introduces these adolescent girls to nontraditional physical activities, such as rock climbing and kayaking, and nontraditional careers, such as engineering. The camp will also offer educational sessions on various topics ranging from bullying to college life to self-defense. The main goal of the camp, according to Evans, “is to equip females with both the abilities and the self-confidence needed to make healthy choices related to physical activity.” The team also hopes to increase the campers’ self-esteem and instill a spirit of self-empowerment in the girls who attend. The camp was held at the Clemson Outdoor Lab March 8-10. The members of the team served as counselors at the camp and also collected and analyzed data related to the outcomes of the event.

Another project that is part of EDGE blends surfing and voluntourism, a term that is becoming more widely used to describe travel or vacations that involve volunteering. This Creative Inquiry team is led by PRTM graduate student Matt Hughes and is partnering with WAVES for Development, a non-profit surf voluntourism organization in Peru. This organization allows volunteers to spend two weeks in Peru working, teaching and mentoring local youth through educational surf programs. After learning some of the issues facing the non-profit, the team has been conducting research and producing literature reviews on various topics related to surfing, travel, and volunteer motivations. They took a trip to Folly Beach, as well, in order to put their research into action.

The PRTM EDGE program is encouraging students to take what they’ve learned in the classroom and put it to use in a very practical way. Students emerge from the program excited about their major and ready to tackle their future goals.
South Carolina works hard to lure visitors to the state’s many attractions. Tourism helps drive our economy, and friendly guests are always welcomed to enjoy our scenic mountain vistas, warm beaches and picturesque lakes. Despite all of that, one visitor has most certainly overstayed its welcome and attracted the attention of Clemson biologists. Its name is *Bellamya japonica*.

*B. japonica*, commonly referred to as the Japanese mystery snail, is exactly that: a mystery. There is plenty of research available about this organism’s taxonomy and genetics, but there is a surprising lack of information detailing the snail’s ecology. Beyond that, nobody has explored the potential risks *B. japonica* poses to industry and human health. These dangers range from economic damage incurred when the snails clog industrial heat exchangers to the potential spread of parasites capable of infecting humans.

This void of knowledge is slowly being filled by the research and experiments of Clemson students led by Dr. John Hains, an associate professor of biological sciences. Since the snails were discovered in Lake Hartwell in 2006, Hains’s classes have been learning as much as possible about them. Hains’s teams have made headway so far, investigating the behavior, habitat preferences, fecundity and dispersal of the snails.

*B. japonica* is native to Asia and Japan and thrives in a wide variety of environments. The exact reason behind their sudden presence in the Savannah River Basin remains unclear, but there is strong evidence that the snails were originally brought to America as part of the Asian food market or for use in home aquariums.

One of the main problems facing Hains and his Creative Inquiry team involves the fecundity of the snails. Fecundity simply refers to the capacity and rate of reproduction attributed to the organisms. “One of the papers we read said that a single female could start an entire population,” said Mark Chestnut, a senior biological sciences major working on the team. According to Chestnut and others in the class, there can be anywhere from 20 to 150 offspring in a single female at any time.

Because the fecundity of *B. japonica* is still relatively unknown, it is hard to estimate how many snails are currently present in Lake Hartwell. Additionally, these snails possess a particular aptitude for camouflaging themselves on top of mud and sediment, burrowing under the lake floor or hiding under rocks. Add rising lake water levels to the equation and Hains says it is all but impossible to determine an exact figure for the population of these snails.
“Checking once a week, they would have twenty babies sometimes,” said Colleen Milsted, another senior member of the team. Tests from the team will eventually determine fecundity as well as any effects of seasonality or correlation to other factors such as water temperature.

The reproductive potential of *B. japonica* presents three serious issues for lake-goers and other South Carolina residents. First, the sudden proliferation of these snails introduces the threat of displacement for other species. Secondly, snails may get sucked into underwater intakes, which causes clogging and may result in the costly shut down of whole systems until they can be cleaned out. Perhaps most importantly, these snails have the potential to act as alternate hosts for parasites capable of infecting humans. So far, there is no evidence of such parasites and no indication that any of the snails have been infected. If that were to happen, Lake Hartwell would be ripe with hosts for these parasites to inhabit, making the potential for human infections much higher. Hains and his team are working diligently to find ways to manage these issues.

Hains’s current team includes Hristos Stamatopolous, Amy Justice, Joey Farmer, Joe Catoe and Mark Chestnut. Past members include Colleen Milsted, Gregory Ricalde, Evan Meadows and Chaney Hiers. These students enjoy their research because it provides them an opportunity to contribute to the knowledge base of an area that is uncharted.

After more conclusive results are obtained, the team hopes others will apply their new discoveries as well. There are currently no similar previous studies of this new invasive species, which means that every discovery made by the team related to *B. japonica* is new.

This project provides fantastic experiences for all students who participate. Joe Catoe, a senior natural resource management major studying woodland environments is particularly invested. “I want to apply what I learn here to more terrestrial species. I know it will help me out a lot in my future career,” says Catoe.

“I want to apply what I learn here to more terrestrial species. I know it will help me out a lot in my future career.”

Fall 2013
At the crossroad of Creative Inquiry and study abroad, Dr. Vladimir Matic’s Creative Inquiry project, Democracy Building in Post Conflict Countries, offers political science students a life-changing experience while studying the political systems of the Balkan region. After a semester long preparation course, students in this Creative Inquiry embarked on a month long study of the Balkan region, visiting four post-communist countries: Serbia, Bosnia, Montenegro and Croatia.

The post-conflict nature of these countries makes them the ideal classroom for students to learn about international relations and foreign politics. Students explore the slow and difficult process these nations face as they attempt to transform their societies into democratic market economies. These nations have formally transformed themselves into democratic societies, yet many communist ways of the past remain in the minds and attitudes of citizens, making a clean break with the past difficult to achieve. Matic explains, “You can change the laws overnight. That is not the problem; however, you cannot easily change the way people behave, think, see themselves and see themselves in relation to the rest of the world.”

To gain more insight before traveling abroad, the students visited Washington D.C. for a day of briefing in these countries’ embassies. While abroad, students met with government institutions, representatives of nongovernmental organizations and students from the School of Political Science in Belgrade. In contrast to the United States, the political systems of these nations are plagued by corruption and instability. In the words of political science student Kate Hunter, “Their government could collapse tomorrow, and all the wonderfully nice people we met could be thrown back into chaos and into war. It was eye opening.”

The students continued with the Creative Inquiry project in the fall when they returned to Clemson, focusing on completing their research project paper. Over fall break, the group returned to Washington D.C. for meetings in the Department of State, Congressional Research Service, and Capital Institutions. “They get compliments from the Department of State and elsewhere for their comprehension of the problems in the region,” Matic proudly says. In addition to their impressive performance in Washington D.C., students from this project also held a panel discussion at the South Carolina Political Science Association’s Annual Conference where they presented their research in March 2013.

Not wanting to conclude their work in the Balkan region, the
students developed another Creative Inquiry that is both a continuation of democracy building and a completely different project. Humanitarian Aid to Support Ethnic Reconciliation began in the spring of 2013 and is also led by Matic. It grew out of the students’ experience upon visiting the site of the 1995 Bosnian Genocide in Srebrenica, Bosnia. There, 8,000 Bosnian Muslim men and boys were killed by the Serbian paramilitary army in the name of ethnic cleansing during the Bosnian War.

“The community is still coping with the tragedy of the past and Clemson students were impressed and inspired by the relief efforts of non-governmental organizations and local youth there. Over the course of the semester, students have collected clothing and school supplies to send to a non-governmental organization in Bosnia to help facilitate education and provide relief for the community.

When asked about their experience, students agree it was “life-changing.” They learned more than just foreign policy, diplomacy and the fundamental issues haunting post-conflict societies. In the words of Matic, “They discover a new different world. Something they not only were unfamiliar with, but did not know existed. They discover that not all people are like us and that different nations have different groups as well as cultures, and they act based on that. They get the opportunity to look at themselves, not in the mirror, but through the eyes of others.”
From attending house parties to frequenting the local bars, students at Clemson regularly engage in an age-old leisure activity for college students—drinking. And, as with many college campuses, alcohol abuse is a pervasive problem many faculty members and administrators hope to overcome. But at Clemson, students have also been making an effort to prevent alcohol abuse on and around campus. The CU Water Drop Creative Inquiry, led by faculty adviser Dr. Gail Disabatino, is a student-run Creative Inquiry that provides local parties and events with free water. Through offering easily accessible, clean water at such parties, the Creative Inquiry successfully promotes responsible drinking habits.

CU Water Drop began as a Creative Inquiry to address the problem of over-drinking. Students analyzed the amount of alcohol college students regularly consume and found the average number of drinks per student per party to be worrisome. “This amount is too high,” student Alex Kan explains. “But we also know that we cannot eliminate over-drinking entirely, so we wanted to come up with ways to make college drinking safer and less of an issue.” The CU Water Drop Creative Inquiry thus took the initiative to make drinking safer rather than attempting to eliminate college drinking entirely. The Creative Inquiry decided to set up a program where anonymous students can request cases of bottled water for parties. The Creative Inquiry then responds to these requests by dropping off the specified number of cases at a scheduled time prior to the beginning of the party. These bottled waters are placed in areas easily accessible to party attendees such as bathrooms and bar areas.

As CU Water Drop has expanded, students in the Creative Inquiry have considered various ways to reach out to Clemson’s student body and increase awareness about the program. Student Lauren Snider explains, “one of the most difficult problems we have had to overcome as a Creative Inquiry has been spreading the word about this service we are offering. If more people knew how easy we make it to get free water, then I definitely think they would be interested in placing orders.” But through marketing and word-of-mouth, the team has targeted and successfully reached an incredible number of students. Working with Greek life enabled CU Water Drop to develop relationships with many fraternities who now regularly place water orders before parties. And with the Creative Inquiry’s success at these parties, word-of-mouth has promoted students throwing house parties to contact CU Water Drop and request water deliveries.

Though CU Water Drop has already made an incredible impact on Clemson’s campus through dramatically increasing alcohol safety at local parties, the Creative Inquiry also has big goals for the future. Student Chelsea Glynn says, “Eventually our ultimate goal is to change the social norm. We want people to go to parties and expect and plan to drink water alongside drinking alcohol.” With such a change, CU Water Drop hopes to continue cutting down on alcohol abuse at universities.
Commemorating a Legend

By Meredith FitzGibbon

Clemson University prides itself on celebrating the men and women who have attended this great institution. Ben Robertson, Class of 1923, is one such alumnus whose legacy must be commemorated. After being born and raised in the upstate and graduating Clemson College in 1923, Ben Robertson went on to write several books that received major national attention, specifically *I Saw England*, his 1941 eyewitness account of the British people during their finest hour and his classic southern tribute, *Red Hills and Cotton: An Upcountry Memory* (1942). In addition to being a novelist, he was also a journalist, social critic, and international correspondent. Unfortunately, his life was cut short when his flight aboard a Yankee Clipper went down near Lisbon in February of 1943.

Despite all his accomplishments and international recognition, Ben Robertson is, as Dr. Alan Grubb describes him, “one of those overlooked Clemson graduates.” The Ben Robertson Society Creative Inquiry, led by Grubb and Dr. Beatrice Bailey, is trying to change this. Their goal is to bring further recognition to Ben Robertson and to honor his legacy as a champion of freedoms throughout the world and as an interpreter of his beloved upcountry South Carolina.

To create a larger awareness for Ben Robertson, they worked with interested students to help found a new undergraduate organization, The Ben Robertson Society. Bailey describes this undertaking as a challenging yet “exciting venture and a good way for students to begin sharing their research, preservation, and civic outreach projects with others.”

Students are developing an online museum that includes images, articles, unpublished manuscripts and research about Ben Robertson. It will also offer details about Ben Robertson Society’s events and efforts. Eventually, the online museum may include a digital archive of Clemson’s Ben Robertson Papers currently housed in Special Collections. Aside from creating the online museum, students are making resource guides for Ben Robertson’s texts to be used in public schools throughout South Carolina. Each semester focuses on a different Ben Robertson book. This past fall, they made a resource guide for *I Saw England*.

Through this Creative Inquiry, Grubb notes, students have not only gained insight into Ben Robertson’s life, but they have experienced “a tremendous sense of discovery.” One of the students, Richard Moore, felt a special connection to Ben Robertson because, like Robertson, Moore is also in ROTC. Robertson was in the inaugural ROTC class offered at Clemson, begun after World War I to prepare students for any possible future military action. Through his research, Moore discovered the rigorous demands of ROTC back then and noted that Robertson learned to use a machine gun while here.

This Creative Inquiry really grew from Grubb’s interest in promoting Clemson alumni who have been overlooked, and from Bailey’s ongoing research into the life and legacy of this down-home internationalist who proved a champion of universal freedoms throughout the world. Ben Robertson is the perfect example of a Clemson graduate whose life may have been forgotten by the University, yet whose legacy should be commemorated. As Bailey says, “He is an alum, he belongs to all the students.”
So who exactly is Virginia Woolf? For years, Woolf has enchanted readers and critics with her innovative prose and witty social commentary. Many of her works serve as standard readings for college literature classes. But how did Virginia Woolf become arguably the greatest woman writer in British modernism? Five Clemson students, led by faculty mentor Dr. Elisa Sparks, set out on a multi-course journey to find out. The four-semester sequence included a course on the modern novel, a two-week trip to England in May 2012 to visit and photograph sites important to Woolf, a literary criticism class focusing on Woolf, and a senior seminar.

History student, Mary Warner Mack, spoke of her interest in studying Virginia Woolf’s life, “I fell in love with Virginia Woolf after reading Mrs. Dalloway a second time. The first time I read Virginia’s work, I was still trying to figure everything out, but my second time around, I think I may have had a romance with her writing. You have to understand, Mrs. Dalloway is not just a story. Mrs. Dalloway is a piece of art.” And through closely examining Woolf’s novels as art forms, this driven group of students has been studying Woolf’s life and work through the special topic of place. Through their discoveries, and collaboration with the Enhancing Campus Activity with Mobile Devices Creative Inquiry project, the group is developing an iPad/iPhone-accessible app with information on the history and significance of locations important to Virginia Woolf’s life and featured in her novels. The app design contains onsite video lectures, photographs taken by students, information on important Woolf criticism, and links to web sources. The aim for this app is to provide students, literary scholars, and common readers with an easily accessible roadmap to Virginia Woolf’s life and career.

Beginning in the spring semester of 2012, students working with Sparks took an introductory course on the modern novel, studying Woolf’s life through exploring multimedia biographical research, participating in discussion based lectures on Woolf’s novels, and analyzing the modern novel...
as influenced by Woolf. This introduction provided students with a much-needed foundation on Woolf’s life. As student Meghan Brown explained, “this class was a chance for us to really get excited about our Creative Inquiry. Everything we learned was what we wanted to study. I felt like I got to design my own class. I’ve never had that opportunity before.” Through the semester, Sparks encouraged students to approach the class with a creative outlook. Students built altered books, old texts physically reworked to incorporate imaginative interpretations of Woolf’s work, and found particular areas of interest to focus their studies. As the Creative Inquiry continues to progress, these areas of concentration have become the students’ academic specialties. Concentrations range from Woolf’s relationship with the educational system in England to the variety of homes Woolf occupied in and around London, and the wide range allows students to learn from each other and thus develop very broad academic groundwork.

The groups’ strong framework on Virginia Woolf came into full play as the Creative Inquiry left the United States, London-bound. Following student-made daily itineraries, the team traveled to places with strong historical significances in Virginia Woolf’s life—her London homes, her country home in Sussex, Monk’s House, and her childhood summer home in St. Ives Cornwall. The group also visited locations central to Woolf’s work such as Kew Gardens, the shopping streets of London, Hampton court, and various galleries and libraries. All the while, students continued photographing, taking notes on their experiences, and posting daily blogs in preparation for creating the Woolf app.

During the trip, students even had the opportunity to enjoy dinner with one of Woolf’s surviving family members, her nephew Cecil Woolf, and his wife Jean. Student Lindsey Johnson remembers, “If you thought the Dos Equis man was the most interesting man in the world you are mistaken—it’s Cecil Woolf.” As Cecil Woolf shared stories about Virginia Woolf and her husband, Leonard, with whom he lived after Virginia’s death, the team’s research took on more personal dimension as they realized their research was part of a living legacy.

“Everything we learned was what we wanted to study. I felt like I got to design my own class. I’ve never had that opportunity before.”

Upon returning to the United States, the students enrolled in a class on literary criticism focused on Woolf, studying how critical perceptions of Woolf’s work have changed and developed the last century. During meetings outside the classroom, students also began developing the framework for the Woolf app, creating the program’s basic storyboard while also compiling photos, videos, and maps and producing write-ups on Woolf’s life in relation to a selection of particular places. This was completed as part of a senior seminar during the spring of 2013 and launched at the annual international conference on Virginia Woolf in Vancouver in June and will be available for free in the App Store. Download WoolfPlace and see for yourself.
What do students in psychology, biosystems engineering and graphic communications have in common? A passion for sustainability. Their interest in the environment brought them to LEAF (Leading for our Environment and Future), a community located in Calhoun Courts where residents learn about sustainable living and environmental issues.

LEAF resident Devon Cornelius says the subject of sustainability grew on him, and now he wants to spread the word and get others involved. “People take the world for granted,” he said. “I want to motivate others to use resources in an environmentally conscious way.”

Inspired by documentaries on subjects like polluted water in urban areas, the waste of electricity and apartment complexes built right next to factories, Cornelius jumped on the opportunity to join the LEAF community, where he learns to live sustainably, recycle properly and plant his own garden.

Together with seven other students, Cornelius, who is a sophomore psychology major, learns about principles of sustainability in weekly classes taught by faculty members who share their passion.

Victor Liao, who has lived in the LEAF community for three semesters, says he has learned to influence others to be more sustainable. In order to do that, “we must be willing to be more disciplined in our sustainability in public as well as in private,” said Liao, a senior in biosystems engineering. “If an individual sees enough people do the right thing, like putting recyclables in the proper receptacle, he or she will be passively influenced to do the same.”

Besides weekly classes, the LEAF community involves participants in discussion-based meetings on environmental issues, sustainable dinners, showings of relevant films and field trips to places like a water treatment facility or the Clemson Experimental Forest. Saahirah Goodwin’s favorite experience, however, is taking care of the community garden. Goodwin, who is a junior in graphic communication, loves planting the garden and watching the crops grow every day.

“It makes us feel like a community, and it impresses people when I show it to them,” she said. “I’m excited to see how well everything grows.” With some help from the Botanical Garden staff, the students have planted vegetables such as...
chard, radish, carrots, bok choy, broccoli and spinach. The watering and weeding responsibilities rotate among the LEAF residents.

The LEAF Creative Inquiry project is directed by Jennifer Goree, the director of Healthy Campus. She and a steering committee of faculty members founded the program in the fall of 2011. Goree says the team behind LEAF employs the community “to study how we can use students to change campus culture.”

Students who participate in LEAF conduct their own research and decide on group projects. Last year, the group aimed to increase knowledge and awareness through social media and the production of videos. “This way, students get hands-on experiences with actually trying to see a project to fruition,” Goree said. “Some of the projects will bring much greater, lasting and systemic changes to the University.”

Such initiatives energize the participants and faculty members. Goree thoroughly enjoys working with the faculty. “They all are incredibly passionate about sustainability and bringing about change, which is truly the goal of the whole community,” she said. “It’s about innovation and it’s about change.”

“The environmental challenges that we face necessitate an interdisciplinary approach to problem solving,” said Dr. Catherine Mobley, professor of sociology. Professors in civil and environmental engineering educate the team about topics like life cycle assessment and quantifiable issues regarding energy and water use, whereas Mobley reminds students that the environment is also very much a social issue. She addresses themes such as advocating environmental action and social justice, pointing out that the negative results of climate change often first hit the more vulnerable populations in the world.

Cornelius understands that not everyone necessarily gravitates toward the subject of sustainability. Because of his background in psychology, he feels certain empathy for people with different views. “That is why I don’t want to impose on people, but I hope that my method of doing things will rub off on others,” he said. “Don’t be afraid to try something new. It is a challenge to live sustainably, but it is an improvement to you and the environment around you.”

Students from all majors are welcome to join the community. The only requirement is an interest in sustainability.
Students involved in this course are required to interview a minimum of four veterans per semester. All interviews must meet the specifications of the Library of Congress since the completed interviews are later sent there for permanent record. Not only do the students involved in this course get to learn through interviewing firsthand, but they are also able to contribute to historical documentation. While students have the option to interview veterans from anywhere, the majority of the interviewees are Clemson graduates. Some have interviewed family members, friends, and even legends like Skardon.

Will Hines, a freshman in his second semester of this course, explains why he thinks the course is beneficial to students. “It is good to see students learning and getting more than just facts about history. With the interviews, you can get a sense of emotion and what it was like for them.”

Not only are the interviews beneficial to the students, but they are also beneficial to the interviewees. This gives the veterans a chance to share their stories and accomplishments. Young says that it is not uncommon during an interview when the interviewee will gradually come to life as he shares his adventures. They enjoy sharing their stories and talking with the students. Young states, “It is important to capture stories of American Heroes, Clemson grad or not, and to have a way to hear their stories forever.” This is exactly what...
this group is accomplishing. Young and his students have big plans for this semester. They currently have an up-and-coming website where all of their interviews will be posted for the public to view. As they have gotten used to working with the video equipment, the interview requirement per semester has gone from three interviews last semester to four interviews this semester. They have also increased the amount of students involved from eight students last semester to eleven this semester.

It all started with an idea. “I had no idea how supportive the campus would be of this project,” says Mack. With the help and support from Young and other faculty members at Clemson University, his idea turned into yet another successful experience for both Clemson students and Clemson war vets with a story to tell.

“It is important to capture stories of American Heroes, Clemson grad or not, and to have a way to hear their stories forever.”

Scan this QR code to learn more about this project!
Anyone who has ever used a smartphone has come across apps, the games and social media programs that they run. Apps like Angry Birds and Foursquare have become household products, and mobile devices are quickly being integrated into all aspects of life. Dr. Roy Pargas of Clemson University’s computer science department saw this trend a few years ago and began two app development projects for Creative Inquiry.

“The reason it got started is I was teaching 101 and in the class there was this group of very energetic, very bright, very active students,” said Pargas. “So I suggested forming a group, forming a Creative Inquiry, and doing [app development], and they all responded. That’s the group that moved forward.”

The Creative Inquiry projects have been active for several years now and have planned and produced numerous apps in that time. Notably, Pargas’s students are responsible for the *Clemson University Tour* app, available on the iOS App Store, which takes the user on a virtual tour of Clemson’s campus, with videos and information about landmarks.

“The point of that app was to provide a tool that would allow a prospective student who couldn’t make it to campus, couldn’t make it to visit, get some sort of feel for the campus,” said Pargas. One of his group’s projects this semester involves updating the videos in the app and creating a version of the updated app for the Android Marketplace.

Another Clemson campus app on the horizon is TeleTiger, which will allow students to submit a report to a server, and the server will redirect the message to the correct recipient. The app is being designed to allow messages to maintenance, CUPD and various other campus organizations.

The projects make use of programming tools specifically designed for app development. When developers like Apple and Google released their mobile operating systems, they also released Standard Development Kits (SDKs) that allow users to create their own apps. Both of these projects focus on students teaching each other these SDKs through research projects and presentations, and then helping each other create apps with their individual areas of expertise.

The Apps ‘R Us project takes first-year students through the development process over three semesters, focusing on Android development. In the first semester, students learn to program in Java. Then, in the second semester, they learn the Android SDK, which runs on Java. The third semester focuses on designing apps that use features provided in Android phones, such as the GPS, accelerometer, and camera.

The Enhancing Campus Activity with Mobile Devices project is a condensed version of Apps ‘R Us for upper level students. During the first semester, students learn to develop using the iOS or Android SDK and go on to produce an app. Students research various tools within the SDKs and present an example of how to use them to the rest of the class. Pargas encourages students in both projects to teach and help each other in the development process.

“I tell the students that in all of the other programming classes that you’ve taken, there’s a very strict rule: no
copying. No looking at each other’s code,” said Pargas. “In this class, the exact opposite is true. Not only are you allowed to copy—cut and paste, even, if that’s what it’s going to take. “I have one strict rule: if you benefit from somebody else’s code, or somebody else’s advice, or somebody else’s effort, you have to put it in your acknowledgements.”

In both courses, the goal is to create a proof of concept to present to a client—whether the client is the student creating the app or an outside group—and search for funding to continue developing the app outside of the course. Pargas wants to ensure that his students receive compensation for their work, especially if an outside client initiated their project.

“If the person who’s interested in [a project] likes what they see, then at that point in the following semester it would be up to them to come up with funds to move the project along,” said Pargas.

Completed apps are uploaded to the iOS App Store and Android Marketplace, and Pargas looks for conferences where they can be showcased.

“A rising tide lifts all boats,” Pargas tells his students. “Think of yourselves as individual tides, and each time you discover something, then the whole class tide rises, and at the end of the semester you come up with great projects.”

“A rising tide lifts all boats. Think of yourselves as individual tides, and each time you discover something, then the whole class tide rises, and at the end of the semester you come up with great projects.”
The Civil War is considered the constitutive conflict in American history, and this divisive struggle between North and South, Union and Confederacy, is still deeply rooted in the personal memories of its citizens. The Sesquicentennial Commemoration of the War (2011-2015) gave Clemson history professor Dr. Paul Anderson cause to begin formulating a concept for a Creative Inquiry project called battleground/BLOODFIELD. Students involved in this project created a website featuring a blog, digital archival content and a video documentary series about various events and figures of the Civil War and its surrounding years. Further, they were given the chance to see South Carolina in light of the conflict—and ensuing Reconstruction—that marred its ground and to expand their knowledge of this important period in the greater history of our nation.

Two students involved in Anderson's project, Daniel Boland and John Russo, were assigned to research the tumultuous South Carolina Election of 1876—an event marked by the Hamburg Massacre and the violent Red Shirts—which signified the end of Reconstruction in the South. Through their exploration of this event, they were able to not only gain a deeper understanding of South Carolina history, but also to hone important skills and
qualities that have aided them in their studies. John Russo, a senior from Orange, CT, initially became interested in the project because of a previous course with Anderson. "I found him to be one of the most knowledgeable and entertaining professors at Clemson. I jumped on the chance to study under him again," says Russo. He explains that in the election of 1876, former Confederate general Wade Hampton was elected governor, becoming the first Democrat governor in South Carolina since the Civil War. Russo’s role in the group was primarily research based, and he spent a number of weekends traveling to various locations throughout the state, such as the historic town of Edgefield. “In Edgefield, I spent most my time in the archives sifting through records and letters pertaining to the violence that occurred,” Russo explains. The team also spent time visiting various graveyards and historic monuments in South Carolina to further their research.

There was great value in this Creative Inquiry experience for a political science major like Russo. “I believe that the Creative Inquiry was one of the most productive and beneficial academic experiences I have had during my four years at Clemson. It gave me the opportunity to get out of the classroom and gain experience conducting research and interviews that I otherwise would not have gotten in a traditional classroom setting.”

Little Mountain, SC, native Daniel Boland was involved with Anderson’s project during his senior year. As a history major, Boland’s desire to be part of the project stemmed from an interest in the Civil War, the issues surrounding the cause, and the consequences that followed. He, like Russo, was involved in researching, traveling and writing a script for a video documentary about the Election of 1876. He describes the group’s approach as egalitarian, with each member getting a chance to voice their opinions.

“My research skills expanded far beyond reading books and primary documents because I was encouraged to search in a variety of places for the answers I sought. These places ranged from city halls to cemeteries.” Boland also gained a better understanding of how to function as a member of a team. “I have always been accepting of other people’s ideas, but this project encouraged this behavior on a level that cannot be matched by writing a simple research paper.”

While both Russo and Boland held some knowledge of the Civil War and its causes and consequences before being part of this Creative Inquiry project, their work gave them both a deeper understanding of a conflict that hits very close to home. “For many Southerners, winning the battle of memory after the war was just a continuation of the war itself,” says Russo. Anderson agrees: “The Civil War was fought—the Civil War continues to be fought—right outside our classroom windows, even at the heart of campus. Our ground remains, today, the battlefield of the war’s memory.” The work of Anderson and the students involved in the battleground/BLOODFIELD Creative Inquiry gives relevance to Civil War memory and sheds light on this definitive period in South Carolina, as well as American, history.
Concrete and water do not mix well. But don’t just take that as common knowledge. Next time you are near a body of water with a concrete block in hand, toss it in. Hopefully, that block wasn’t anything important, because it’s not resurfacing.

But perhaps it could. Perhaps, if some clever engineering was involved. Sound impossible? Ask the Clemson Concrete Canoe Team, who has been doing the impossible year after year. The Creative Inquiry team, nicknamed 3CT, is a group of civil engineers who share the same goal: to create a seaworthy vessel made of a very heavy material that can handle a paddling team in competition.

That, however, is just the end product. An entire year’s worth of work goes into the design and construction of the canoe, with a close crew of around 15 students putting in two to three work sessions a week through the fall and spring semesters. The design of the canoe allows the team to use their engineering know-how in parallel with software design programs, many of which allow for key variable measurements.

“In August, I created the hull design using a program that estimates the drag force,” explained Richmond Lam, a junior civil engineer who has been with the team for two years. The hull is the main body of the canoe, and its shape is important to the vessel’s life in water. “We have to build the form for the canoe,” explained junior Taylor Nunamaker. “Once we get the mix design together, we actually place the form on the canoe.”

It’s not all statistics and computer programs, though. 3CT gets to show off its creativity in the aesthetic design, and it’s important to the team that the canoe not only works well but also looks the part. “Last year, our theme was superhero. [The canoe was] called Opticon, because they were using a lot of the optical fibers...so that light could go through,” explained Nunamaker.

While this can be a welcome invitation for originality, the team agrees that one of the more difficult aspects of the inquiry is project management. “You have to divvy up the responsibilities,” explained Lam, which is a part of “just getting everything organized.”

3CT hopes this teamwork will produce a strong showing at regionals, the necessary platform for a shot at nationals. The competitions are split up into four sections with three being determined by a panel of judges; the fourth non-judging section is the paddling race, the most exciting section for the team.

“Honestly, I think that’s the most fun part, because it’s not based on the judges,” said Lam. Clemson has a strong history with the competition, especially in the late 90s and early 2000s when current faculty advisor Dr. Brad Putman was on the team. Putman helped Clemson win three national championships during his stint, with Clemson’s last championship coming in 2002.

But beyond a winning record, the team is happy to utilize their engineering skills outside the classroom. “It’s a hands-on project,” explained Nunamaker. “It’s more like a real life project than what you’ll get in the classroom.”

A common echo among the team members was the desire to be involved with a Creative Inquiry in the field of civil engineering, where real time and effort could create a product the team could support. Not only do the members get to practice vital civil engineering skills like structural analysis and construction design, they also experience the reality of working with others in pursuit of a common goal. This group dynamic is a lesson that can’t be learned in the classroom.

The end of the academic year brings with it the completion of an engineering feat. Luckily, Clemson calls itself home to a group of dedicated and talented engineers that use their in-class knowledge to achieve a real-world goal. Building a concrete canoe may sound impossible, but 3CT carries the expertise to make it a reality.
Creative Inquiry Supporters

Creative Inquiry is supported by the Clemson University Provost, the Vice-Provost and Dean of Undergraduate Studies, industry and private donors. We are grateful to all our supporters.

We thank Provost Emeritus, Dr. Doris Helms, for her insight into the needs of Clemson students. Creative Inquiry would not exist without her innovative spirit and support.

We are indebted to the donors whose generosity has broadened and strengthened the Creative inquiry program

Phil and Mary Bradley are staunch supporters. Their support includes funds for student projects and the annual Phil and Mary Bradley Award for Mentoring in Creative Inquiry.

Additional thanks to the Clemson Alumni Association, Lori Ann and Chalmers Carr III, the Harris Corporation, Libby Rauch, Wayne Roper, Goz and Pat Segars, Doug and Lynn Smith, and Dr. and Mrs. Charles (and Linda) Watt. We also thank the future gift commitment of our Legacy donors, Bob and Brenda Muldrow.

Mentoring in Creative Inquiry

The Phil and Mary Bradley Award for Mentoring in Creative Inquiry is presented each spring in recognition of outstanding work with undergraduate students. Nominations are accepted from student participants in Creative Inquiry Initiative team projects. The award is made possible by a generous gift from Phil and Mary Bradley, and consists of a plaque and a salary supplement.

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