MISSION

The Center for Education Integrating Science, Mathematics, and Computing (CEISMC) enhances PreK-12 and postsecondary STEM education by drawing upon the expertise and scholarly contributions of the Georgia Tech community. CEISMC advocates for and leads systemic changes to increase STEM interest and achievement for all students, especially those underrepresented in STEM. CEISMC’s research efforts allow for the identification and dissemination of evidence-based best practices in STEM education.

VISION

CEISMC will define and exemplify effective STEM education to maximize students’ readiness to excel in a rapidly changing world. We are leaders in influencing significant curricular, pedagogical, social and policy reform efforts that will shape STEM education and workforce development.

GOALS

- Inspiring STEM Enrichment And Outreach For Students
- Intensive Professional Development For STEM Educators
- Local And Sustainable Community Partnerships
- Innovative STEM Education
- Research And Evaluation Of STEM Education
- Dynamic Opportunities For Georgia Tech Community Engagement

WHERE IS CEISMC IN THE STATE OF GEORGIA?

A MESSAGE FROM EXECUTIVE DIRECTOR

Dr. Lizanne Destefano

In 2018, I was honored to be appointed to the inaugural STEM Education Advisory Panel, charged with working with 14 federal agencies to produce a 5-year STEM Education strategic plan for our country. Throughout the process, I was constantly struck by the importance of higher education in providing high-quality STEM education at the undergraduate and graduate levels, but also its critical role in strengthening STEM education through STEM outreach and continuing professional education. On December 4, 2018, “Charting a Course for Success: America’s Strategy for STEM Education” was released, detailing the federal government’s strategy for expanding and improving the nation’s capacity for STEM education and preparing citizens with the skills necessary for the STEM economy of the future. The three pillars of the report: “diversity, equity, and inclusion,” for women and racial minorities in STEM, building strong foundations for every American to become STEM literate, and preparing all Americans for the future STEM workforce are consistent with the goals and mission of CEISMC. We look forward to contributing to this exciting new chapter in STEM Education.

Warm regards,

Dr. Lizanne Destefano

CEISMC ASSOCIATE LEADERSHIP

Meltem Alemdar  
Educational Research and Evaluation

Bonnie Harris  
Strategic Partnerships and GIFT Program

Tamara Pearson  
School and Community Engagement

Chris Thompson  
Student Programs

Marion Usselman  
Development and Educational Innovation
Today’s world demands that students acquire a greater understanding of advances in science, technology, engineering, and mathematics (STEM) from an early age. CEISMC seeks to inspire STEM exploration by providing pre-kindergarten through high school (PreK-12) students with summer programs, weekend workshops, community outreach, and STEM competitions that take advantage of the resources and expertise of the Georgia Tech community. Student enrichment programs engage over 11,000 young scholars in hands-on learning experiences each year, paving the way for future success in STEM.

Horizons Atlanta at Georgia Tech

Horizons Atlanta at Georgia Tech is a year-round program designed to help students close the opportunity gap and find success in school. The program prevents the Summer Slide and assists students with setting and achieving goals for themselves including high school graduation and participation in post-secondary educational experiences. The program served more than 175 students and included an after-school component and a high school mentoring program.

Summer PEAKS - Programs Enriching Accelerated Knowledge in STEM

Programs Enriching Accelerated Knowledge in STEM (PEAKS) offers over 24 hands-on summer enrichment programs for future engineers and scientists. These programs provide exciting inquiry-based STEM learning opportunities in advanced topics not typically available to pre-college students in traditional school settings.

Georgia First Lego League

The FIRST LEGO League (FLL) is an international competition for 4th through 8th-grade students that promotes creative STEM thinking through robotics. CEISMC coordinates the largest region in the country, with over 700 teams and 6,000 students. The 2017-18 Georgia competition system included 30 first-round Regional events, eight second-round Super-Regional events, and two State Championship competitions, held at Georgia Tech and Georgia Gwinnett College.

K12 - Inventure Prize at Georgia Tech

The mission of the K-12 InVenture Prize at Georgia Tech is to create the next generation of engineers and entrepreneurs by making invention education accessible to all students and teachers in Georgia. The program extends the collegiate success of Georgia Tech’s InVenture Prize competition to the K-12 level. Over 4,000 students from 80 schools participated in 2017-18.

K.I.D.S. Club and STEAM Workshops

Kids Interested in Discovering Science Club (K.I.D.S. CLUB) is a program that is held six Saturdays each year designed to enhance and encourage curiosity and enthusiasm for science, mathematics, engineering, and technology. Activities included rocketry, bioengineering, squid dissection, mobile game and app development, LEGO® Robotics, and much more.
INSPIRING STEM ENRICHMENT AND OUTREACH FOR STUDENTS

Being in an environment where workforce and STEM education co-exist means that we are able to view our efforts through the lens of each student as a lifelong learner and how they might one day fit into the economic pipeline.

Tim Cone, CEISMC Savannah Campus Program Director

CEISMC Savannah Brings K-12 STEM Opportunities to Southeast Georgia

The Savannah campus of Georgia Tech’s CEISMC provides the region with innovative and accessible STEM opportunities.

CEISMC aims to establish sustainable community partnerships that make innovative K-12 STEM education and professional development more accessible to all. One way in which CEISMC carries out this mission is through its campus at Georgia Tech Savannah.

CEISMC Savannah serves as a hub of resources for K-12 teachers and students in the southeastern region of Georgia. It is currently partnered with schools in Bryan, Chatham, Effingham, and Liberty counties.

CEISMC Savannah utilizes the expertise of the Georgia Tech community to increase STEM interest and achievement for all students. It offers a variety of workshops and programs for K-12 students, including First Lego League (FLL), Full STEAM Ahead summer camps, and Elementary Science Olympiad.

In addition, CEISMC Savannah offers satellite camps for rural Georgia school districts and hosts its own version of K.I.D.S. Club called Saturday STEMLabs, where students can interact with STEM concepts in engaging ways.

Savannah is also home to Georgia Tech Professional Education (GTPE). GTPE combines academic rigor with industry training to inspire workforce leaders. The presence of GTPE helps to frame the goals of CEISMC Savannah in a unique way.

“Being in an environment where workforce and STEM education co-exist means that we are able to view our efforts through the lens of each student as a lifelong learner and how they might one day fit into the economic pipeline,” said Tim Cone, program director of CEISMC Savannah.

The region has already seen an impact in K-12 STEM engagement. For example, CEISMC Savannah established the first K-12 InVenture Prize Regional Competition. Before CEISMC Savannah was established, no schools in the southeastern region participated in the K-12 InVenture Prize. In 2018, CEISMC Savannah helped bring the number of participating schools in the region up to 15.

This increase is just one example of how greater access to K-12 STEM opportunities in southeastern Georgia has heightened student engagement and interest in STEM.

In addition to providing opportunities for students, CEISMC Savannah also offers professional development for STEM teachers. This includes K-12 InVenture Prize support, EarSketch training, Hummingbird Robotics training, and assistance for schools that are developing Makerspaces. CEISMC Savannah also connects teachers in the region to research and industry professional development opportunities through the GIFT program.

By providing these opportunities for professional development and K-12 STEM learning, CEISMC Savannah carries out its goal of expanding K-12 STEM education to underserved populations in the southeastern region of Georgia.

Rosemary Pitrone - CEISMC Communications

“Being in an environment where workforce and STEM education co-exist means that we are able to view our efforts through the lens of each student as a lifelong learner and how they might one day fit into the economic pipeline.”

Tim Cone, CEISMC Savannah Campus Program Director
Building Capacity for 3D Content, Practices and Crosscutting Skills

This project is a Department of Education Math and Science Partnership between Fulton County Schools and Georgia Tech. CEISMC led the overall coordination for Georgia Tech and provided professional development for 25 middle school teachers. The School of Earth and Atmospheric Sciences provided professional development for 45 elementary school teachers.

STEM Teacher Leadership Program at Georgia Tech Sponsored by Honeywell

This program starts with four weeks of intensive summer training in software engineering and computing with 25 selected teachers. Teachers have access to Georgia Tech’s computing research and Honeywell engineers, who serve as mentors and coaches. The program includes the Honeywell STEM Challenge, a software engineering competition open to students of teachers who participate in the program. Students work in teams to solve real-world challenges using software coding and computation techniques. An annual STEM Teacher Leadership Program Symposium is held where alumni and other teachers and leaders from the metro Atlanta area can attend academic and networking activities at Georgia Tech.

A Closer Look at the GIFT Program

Georgia Intern-Fellowships for Teachers (GIFT) provides K-12 teachers science, technology, engineering, and mathematics (STEM) internships in university research labs, industry, and informal science institutions. Teachers gain real-world context and experiences to build innovative, relevant curricula and to promote career awareness.

GIFT partnered with the Georgia Department of Education’s Georgia Foundation for Public Education (GFPE) to expand STEM internships to teachers throughout Georgia. Collaborating with local Chambers of Commerce, businesses and school districts, internships were implemented in Bibb, Bryan, Chatham, Macon, and Twiggs counties.

The GIFT program was presented to U.S. Secretary of Education Betsy DeVos during her October 3, 2018 visit to Georgia Tech as part of the Secretary’s “Rethink School” tour.

R.E.A.L. (Research, Experiment, Analyze, and Learn) students Peyton Holston, Aaron Frazier, and Srirakshaa Sundararaj presented their GIFT summer research at the 2018 Biomedical Engineering Society (BMES) Expo on Thursday, October 18, 2018. The team was led by GIFT teacher Rajini Sundar (M. E. Stillwell School of the Arts, Clayton County Schools).

Cutting-edge cell therapy research conducted by GIFT teachers Stan Harrison (Morgan County Schools), Elizabeth Gordon (Fulton County Schools) and Evelyn Larose (Atlanta Public Schools) was featured in a national video for the Center for Cell Manufacturing Technologies (CMaT). CMaT, headquartered at Georgia Tech, is partnering with the University of Georgia, the University of Puerto Rico at Mayaguez, and the University of Wisconsin-Madison on the project with the goal of making cell therapy scalable, high quality, and affordable.
Science teacher Carrie Beth Rykowski of Cumming, Georgia, is a 2018 recipient of the Presidential Awards for Excellence in Mathematics and Science Teaching. The recognition is the highest for excellence in teaching that is available to K-12 mathematics or science teachers in the U.S.

A Georgia Tech graduate (BS ’07 Management), Rykowski taught sixth-grade Earth Sciences from 2012 to 2015. Since 2016, she has been a STEAM teacher for grades six through eight at Vickery Creek Middle School in Forsyth County, Georgia. Rykowski is an alumna of the Georgia Intern Fellowship for Teachers (GIFT), which she says profoundly influenced her teaching.

GIFT is a CEISMC program that pairs K-12 STEM teachers with science and engineering mentors for summer internships. Its goal is to provide teachers with real-world research and industry experience. GIFT also helps educators create innovative lesson plans for STEM classes.

Rykowski participated in the GIFT program in 2014 and was mentored by Peter Hesketh of George W. Woodruff School of Mechanical Engineering. From 2015 through 2017, Rykowski also worked with Ayanna Howard from the School of Interactive Computing.

Because of the GIFT experience, Rykowski adjusted her teaching style. Rather than asking students to memorize facts, she began to ask them to figure out “how we know what we know about science.” This change in teaching style “exemplifies CEISMC’s goal of empowering teachers to advance students’ interest and readiness to excel in STEM,” said GIFT director Bonnie Harris.

Rykowski also participated in PRIME, a sub-group cohort of the GIFT program funded by the National Science Foundation (NSF), where she learned computer programming. Her students use the online coding platform Scratch for their science projects, and she now coaches two robotics teams at her school.

When Rykowski noticed that students enjoyed arts-infused engineering lessons, she also created an elective course called STEAM Generation that combines arts, engineering, and computer science. More than 300 students in grades six through eight have registered for the course for the 2018-19 school year.

“I am so excited about this award. It is a huge vote for STEAM and the amazing work my students have created,” Rykowski said. “The partnership between NSF, Georgia Tech, and my classroom has made a huge impact. Kids get to see themselves as scientists and engineers who can solve exciting problems.”

Rosemary Pitrone - CEISMC Communications
ArtsNow Impact Project: Arts in Education Model Development and Dissemination Grants

During this project, CEISMC partnered and planned with ArtsNow, Cherokee County teachers, and a Georgia Tech graduate student to develop, share, and facilitate STEAM lesson plans for implementation in four elementary school classrooms.

Drew Charter School Partnership

CEISMC partnered with Drew through funding from the East Lake Foundation, Bill and Melinda Gates Foundation, and the Governor’s Office for Student Achievement. CEISMC implemented the Arts and STEAM program with the Ferst Center, a summer STEAM Academy, and professional development for teachers. In the senior academy, CEISMC provided tutors and facilitated a summer bridge program for students transitioning from 8th to 9th grade.

GoSTEM

The GoSTEM program mission is to develop a research-based model for how universities, school systems, and philanthropic foundations can partner to promote academic achievement in STEM fields for Hispanic K-12 students.

Physiology Laboratory Experiences For Applied Science Education (PLEASE)

The PLEASE Program is a project partnership with Fulton Leadership Academy (FLA) to provide 6th through 12th-grade science and mathematics teachers with intensive and follow-up professional learning sessions designed to enhance and deepen pedagogical content knowledge in the Mathematics Georgia Standards of Excellence and newly adopted Science Georgia Standards of Excellence through the use of problem-based learning and reality pedagogy.
Kevin Arne, Paulette Richards, Ryan Snelling, and Rachel Tierney have completed the first year of the Innovators-in-Residence program at M.R. Hollis Innovation Academy. The group worked for CEISMC as part of the academy’s partnership with CEISMC’s School and Community Engagement program.

During the 2017-18 school year, the innovators-in-residence helped STEM teachers at Hollis integrate technologies such as robotics kits and 3D printers into their classrooms.

Snelling helped teachers run their own printers. He is an aerospace engineer and member of Decatur Makers. “We showed [teachers] not only how to use tools like Tinkercad and Onshape to create designs,” Snelling said, but also how to operate and use the printers in class and perform routine maintenance.

Tierney, an undergraduate student studying computer science at Georgia Tech, helped develop a class project for an Earth Science class. Using a seismograph she made out of KNEX pieces and Hummingbird Robotics Kits as a model, the students built their own devices. Because Tierney left the design to the students, “the seismographs all looked different, which was very cool,” she said.

All four innovators-in-residence worked on a final project based on the film Black Panther. Inspired by the use of wearable technology in the fictional Kingdom of Wakanda, the project incorporated art, 3D printing, and coding.

“We came up with this Wakandan fashion idea,” Richards said. She incorporated Black Panther’s use of West African symbols known as Adinkra by finding analogs for the six “Habits of Hollis” – Communication, Collaboration, Creativity, Empathy, Perseverance, and Self-Discipline.

In art class, the students used 3D-printed Adinkra stamps to transfer the symbols onto cloth panels. The panels were fashioned into costumes that incorporate brooches, which the students programmed to light up.

The Black Panther project encompassed cultural studies, design, and coding. “When you bring all that together, now you’re seeing a much more real-world example,” Snelling said. “Multidisciplinary types of work are becoming more and more common. The best websites have graphic designers — so it’s not just code; it’s art. The more we build those kind of learning experiences, the more they directly translate into work you could be doing in the future.”
The K-12 educational innovation work at CEISMC aims to examine how STEM integration in education is best achieved and its implications for student learning and teacher classroom practice. CEISMC develops educational interventions that utilize culturally relevant and authentic practices to increase student engagement, motivation, and persistence in STEM. Additionally, professional development experts at CEISMC are making advances in online learning by creating highly interactive courses that promote and model inquiry learning.

Art in Motion

Art in Motion is a project-based curriculum designed to integrate computer science into art classes authentically. Utilizing local art museums and galleries, students select inspiration pieces as the basis for moving robotic sculptures. Students design and create their robots using strategies and processes used for any art project: sketching, journaling, revision, peer critique, and more. This program helps students who don’t usually see themselves as part of the computer science pipeline broaden their view of themselves as potential coders. Art in Motion is being implemented with 32 8th grade students at Sandtown Middle School in south Fulton County, with plans for expansion to several more schools during the 2018-19 school year.

CAPACiTY

CAPACiTY has been developing a new curriculum for the high school Introduction to Digital Technology course that teaches computational thinking to students using problem-based and inquiry strategies that enable students to pursue questions of personal interest while mastering technical skills. The goal is to engage minorities and girls in better learning skills that will allow them to have success in later computer programming courses.

CEISMC at Georgia Tech STEAM Leadership Conference

Through a partnership with the Georgia Tech Research Institute (GTRI) and the Georgia Department of Education, the conference sought to inspire STEAM education innovation. From Georgia Tech researchers to school principals, this conference offered experiences in the best of STEAM education through engaging, challenging, and interactive sessions.
Educators throughout Georgia recognize the growing demand for innovators in computer science fields. However, it is challenging to prepare the next generation of computational thinkers when many K-12 teachers are not specifically trained to teach the subject.

That is why CEISMC is a regional partner of Code.org, a nonprofit founded in 2013 that seeks to expand access to computer science (CS) for K-12 students. Together, CEISMC and Code.org offer professional development sessions that help K-12 teachers who often have little or no background in CS prepare to offer CS courses at the elementary, middle, and high school levels.

In these sessions, CEISMC provides support to Georgia computer science teachers and trains facilitators on the Code.org curriculums. The training alleviates fears that many teachers may have of teaching a subject they do not have much experience with.

The training consists of a five-day intensive summer workshop at Georgia Tech, followed by quarterly just-in-time follow-on training sessions.

The center aims to establish teams of Code.org facilitators across the state, so that Georgia Tech remains a hub for professional development, but travel does not hinder educators from other parts of the state from receiving support.

The professional development offered by CEISMC will also indirectly help teachers prepare for a required certification test that the state of Georgia has recently introduced for CS educators.

Chris Thompson, director of CEISMC’s partnership with Code.org, believes computational thinking is a fundamental skill that is demanded even in fields outside of computer science. Students can be introduced to this kind of thinking by learning about algorithms.

A common way to introduce students to the concept of algorithms is by breaking down the steps of making a sandwich. Mapping out that process helps students apply algorithms to other subjects. “You use algorithms in mathematics, in diagramming a sentence, in writing a story,” Thompson said.

Computer science also opens up new avenues for students to express themselves creatively. Thompson cites surveys demonstrating that many children want to learn computer science in school, and that their parents want them to learn it, too.

“The demand is out there,” Thompson said, “so if it benefits students, why not find a way to give them an opportunity to learn it?”

Code.org has evolved and expanded in the last five years. With its growth, Code.org partners have transitioned to a fee-for-service professional development model. The curriculum remains free for any teacher or school to use. Fees collected by CEISMC in the future will allow the organization to continue offering professional development opportunities to teachers throughout Georgia. Scholarships are available to schools with high numbers of underrepresented minorities or free and reduced lunch students.

These trainings are critical not only because they support CS teachers, but also because both Code.org and CEISMC place a particular emphasis on expanding participation of students who are girls or underrepresented minorities in STEM.

“Equity is a big piece of what Code.org looks at,” Thompson said. “It doesn’t matter what your background in computer science is; it tries to put everybody on a level playing field.”

Thompson believes Code.org is a great resource for equitable computer science education; however, he advises teachers and schools to use the CS curriculum that works best for their individual needs. CEISMC is available to provide support to teachers and schools no matter which CS curriculum they choose.
Researchers within CEISMC pursue questions related to K-12 engineering education and its relationship to science education. The CEISMC Educational Research and Evaluation Group utilize a mixed method approach employing both qualitative and quantitative data sources to determine the impact of numerous K-12 programs and interventions; the evaluation of these interventions focuses on measuring student outcomes and teacher professional development impact on classroom practices. CEISMC researchers also assess the impact of educational interventions on students’ mastery of 21st-century skills such as collaboration, teamwork, problem-solving, and creativity.

An Exploratory Study: The Role of Social Networks and Self-Efficacy in the Retention of Noyce Teachers

This study is a Robert Noyce Scholarship Program Track IV Research grant funded by the National Science Foundation. The primary purpose of this exploratory study is to investigate the role of Noyce teachers’ personal networks and self-efficacy on teacher retention in high-needs school settings. In addition, this study will produce survey instruments and databases to be used by Noyce Programs throughout the United States. NSF Award #1660597

Evaluation at Atlanta Science Festival

The Atlanta Science Festival has held an annual public celebration of science to expose the Atlanta community to science through 100 events and an expo. The CEISMC Evaluation team has been the sole evaluators of the festival for the past four years. Every year the team conducts interviews with attendees and collects surveys taken in-person on iPads, available in both English and Spanish.

NRT-IGE: Integrating Team Science into the STEM Graduate Training Experience

This NSF Research Traineeship (NRT) award in the Innovations in Graduate Education (IGE) Track to the Georgia Institute of Technology will develop materials to train graduate students to work in teams and will measure the effectiveness of these materials. The project will take a novel approach to curriculum development by drawing on best practices in team training from a wide range of sources. NSF Award #1735017

The Pipeline to Teacher Preparation in Chemistry and Physics

The CEISMC Research & Evaluation group serves as the external evaluator for this National Science Foundation funded Robert Noyce Scholarship Program. The program aims to recruit high school and early college STEM majors into secondary chemistry and physics programs with a teacher certification option. Overall, the primary evaluation question is, “To what extent has the program been successful in achieving its goals?” NSF #1340019
The CEISMC Educational Research and Evaluation Group has completed Phase I of “An Exploratory Study: The Role of Social Networks and Self-Efficacy in the Retention of Noyce Teachers.” In 2017, CEISMC researchers received a two-year grant from the National Science Foundation (NSF) for the research.

Study participants are early-career teachers from the Robert Noyce Teacher Scholarship Program. Noyce programs aim to increase the number of qualified STEM teachers in underserved, or high-needs, schools.

The principal investigator is Meltem Alemdar. Christopher Cappelli and Jessica Gale are co-principal investigators. Shaheen Rana is also an author of the study.

The study examines how the characteristics of Noyce programs across the country are associated with teachers’ self-efficacy beliefs, the structure of their personal networks, and their retention in high-needs schools.

The researchers shared their pilot data at two different conferences. The first was the International Network for Social Network Analysis (INSNA) Sunbelt Conference. There, they were able to discuss their methodology with other experts in social network analysis.

“The conference is very well-attended, very friendly, and provides great feedback for researchers in social network analysis to talk to each other about their work,” Alemdar said.

The researchers also attended the NSF Noyce Summit, where attendees approached them to share how a workshop Alemdar and Cappelli held there last year has helped them use social network analysis in their own research. The researchers plan to hold a more comprehensive workshop in 2019.

The preliminary results from Phase I provide a snapshot of early-career STEM teachers that shows the density of their networks and how likely they are to remain in a high-needs school. CEISMC researchers will continue with Phase II by conducting cognitive interviews to validate the survey. Once finalized, the survey will be sent to a larger population of participants.

After completing both phases of this two-year grant, the researchers will write another grant to expand their use of the survey instrument. They hope to reach more teachers and collect data to improve how Noyce programs prepare STEM teachers for working in high-needs schools.

Rosemary Pitrone - CEISMC Communications
CEISMC partners with Georgia Tech faculty to develop initiatives that support teacher STEM knowledge. The U.S. Department of Education supports many of these projects through the Math and Science Partnership (MSP) program and the Improving Teacher Quality state grants.

**Distance Math Dual Enrollment Program**

This program provides advanced mathematics courses to high school students who have completed the AP Calculus BC course and exam. High school students enrolled alongside Georgia Tech students in Linear Algebra and Multivariable Calculus, received all instruction through distance learning technologies, and earned Georgia Tech credit.

**Gwinnett County Math and Science Partnership**

With CEISMC’s support, Georgia Tech faculty and graduate students, in collaboration with teachers and administrators from Gwinnett County Public Schools, designed and conducted Elementary Science and Mathematics Endorsement classes for elementary teachers in grades 3 through 5. CEISMC also assisted with the coordination and implementation of the academic year and summer activities, including professional learning days, field trips, portfolio grading, and classroom and cohort visits.

**Newton County Math and Science Partnership**

The Newton MSP Project includes two cohorts of teachers who participate in a two-year program of study. The professional learning planned for each year consists of a minimum of 60 hours of instruction, facilitated by Georgia Tech faculty with CEISMC, and 20 hours of additional support through professional learning communities, classroom observations and feedback, and assistance from school and district level instructional coaches as needed.

**Science Olympiad at Georgia Tech**

The Science Olympiad is a nationally recognized program for enhancing science education and interest in science. In the spring of 2018, CEISMC hosted a Division C regional tournament for 20 teams of high school students from the metro Atlanta area. Winning teams advanced from regional to state to national competitions.

**Science Teacher Day at Tech**

This event at Georgia Tech involves cutting-edge lab tours, collaboration with your peers to complete an authentic college-level freshman lab activity, conversations with Georgia Tech students about how to prepare your students for college, and enjoying the fun and excitement of science.
Georgia Tech has long been committed to improving STEM (science, technology, engineering, and mathematics) education in Georgia and making it more accessible to students from diverse backgrounds who are interested in pursuing STEM degrees and careers.

This commitment recently took a significant step forward, thanks to a $5 million grant from The Goizueta Foundation to Tech’s Center for Education Integrating Science, Mathematics, and Computing (CEISMC). Over the next five years (one planning year followed by four years of implementation), the funds will be deployed to build a curriculum that integrates the arts into STEM education, from pre-kindergarten through 12th grade.

GoSTEAM will begin in summer 2019 in a select group of metro Atlanta schools where a majority of the students come from low-income families and are underrepresented in STEM fields. It builds upon the findings and lessons learned from The Goizueta Foundation-funded GoSTEM, an ongoing collaboration between Georgia Tech and Gwinnett County public schools to enhance the educational experience of Latino students and strengthen the pipeline into postsecondary STEM education.

The new GoSTEAM program has the potential to demonstrate the value of integrating the arts and culture into engineering and computer science instruction, and to provide multiple roadmaps that other schools can replicate. In the participating schools, the program will give teachers and administrators the time, resources, and coaching assistance to be able to transform creative ideas into fully implemented programs.

“We want to create a model curriculum that spans pre-K through high school and illustrates meaningful and innovative integration of the arts with science, technology, engineering, and mathematics,” said Lizanne DeStefano, executive director of CEISMC, associate dean in the College of Sciences, and professor in the School of Psychology.

DeStefano was recently named by the National Science Foundation (NSF) as one of 18 inaugural members of its STEM Education Advisory Panel. Similar to her mission at CEISMC, and as a contributor to the Georgia Tech Commission on Creating the Next in Education, she is interested in “sharing Georgia Tech’s STEM education innovation, and learning from others, across the country.”

GoSTEAM will play a crucial role in putting new ideas and collaborations to work in Atlanta’s schools — particularly those schools that already emphasize engineering, computer science, entrepreneurship, and innovation. Here, the fine arts, media arts, theater arts, and music will be used to increase student engagement in STEM, problem-solving, and teamwork and collaboration. And it wouldn’t be possible without the power of philanthropy to put bold ideas and fresh thinking to work in creating new generations of learners and discoverers.

Stacy Braukman - Georgia Tech Communications
Committee Appointments

Georgia Tech Youth Programs Advisory Board
Sirocus Barnes
Program Director, Horizons at Georgia Tech, CEISMC

National Science Foundation’s STEM Education Advisory Panel
Lizanne DeStefano
Executive Director, CEISMC

Hispanic Heritage Month Planning Committee
Diley Hernandez
Senior Research Scientist, CEISMC

Awards and Recognitions

Georgia Tech Institute Diversity Faces of Inclusive Excellence 2018 Recipient
Lizanne DeStefano
Executive Director, CEISMC

Georgia Tech Institute Diversity Faces of Inclusive Excellence 2018 Recipient
Shaheen Rana
Research Associate II, Research and Evaluation Group, CEISMC
The National Science Foundation (NSF) – in consultation with the Department of Education, NASA, and the National Oceanic and Atmospheric Administration (NOAA) – has appointed Lizanne DeStefano as one of 18 inaugural members of its STEM Education Advisory Panel.

DeStefano is the executive director of CEISMC. She is also an associate dean in the College of Sciences and a professor in the School of Psychology at the Georgia Institute of Technology.

DeStefano’s research interests include the evaluation and sustainability of innovative STEM education programs and initiatives, including those serving special populations, such as students with disabilities or those at-risk for academic failure. She contributes to efforts that improve the quality of teaching and the student experience, such as the Georgia Tech Commission on Creating the Next in Education. DeStefano is a former special education teacher and a clinical and school psychologist.

“I am honored to serve on the inaugural panel and look forward to sharing Georgia Tech’s STEM education innovation and learning from others across the country,” DeStefano said.

The NSF STEM Education Advisory Panel was created to encourage U.S. scientific and technological innovations in education. Under the American Innovation and Competitiveness Act, Congress authorized the creation of the panel to advise a group of federal organizations called the Committee on Science, Technology, Engineering, and Mathematics Education (CoSTEM).

In particular, Congress authorized the panel to help identify opportunities to update the 2013-2018 Federal STEM Education five-year strategic plan, which CoSTEM developed to improve the efficiency, coordination, and impact of federally supported STEM education investments.

In addition, the panel will assess CoSTEM’s progress in carrying out responsibilities mandated by the America COMPETES Reauthorization Act.

“This new panel has an opportunity to bring fresh eyes and novel approaches to CoSTEM’s next five-year strategic plan, which will help enhance the nation’s entire STEM ecosystem,” said NSF Director France Córdova, who co-chairs CoSTEM. “NSF continues to generate benefits for society through STEM research. To fulfill that mission, we and our federal partners need to make strategic investments to create new generations of discoverers.”
PRESENTATIONS


Hernandez, D. “STEM Education and Preparation: Promoting Equity Through Culturally Relevant Educational Initiatives.” Keynote address Summit on Educating for the Future - Cumbre de Educación al Futuro, San Juan, Puerto Rico, August, 2018


PUBLICATIONS


The CEISMC Year in Review 2018 Report was produced by Rosemary Pitrone and Steven Taylor.
CEISMC
Center for Education Integrating Science, Mathematics, and Computing

Georgia Institute of Technology
817 W. Peachtree Street, NW
Suite 300
Atlanta, GA 30308

Web: ceismc.gatech.edu
Phone: 404-894-0777
Fax: 404-894-9675