The Center for Science, Technology, Engineering and Mathematics Education (STEM) is to promote a regional vision for STEM education and outreach, to increase capacity in leadership, and to facilitate collaborate partnerships for addressing STEM priorities for PreK-20.

This report highlights our efforts focused on addressing STEM teaching and learning needs and providing a voice for STEM education.
The STEM Pre-College Program served 77 students in the three Saturday Academy: one in each of the 3 months. Saturday Academy provides students with enrichment activities and hands-on activities including Robotics, Mole/Chemistry Day, Mathathon, ACT SAT Prep among others.

The Center is sponsoring a second year of the STEM Education Leadership Professional Learning Community. STEM Education Leaders from multiple districts meet for day-long opportunities to share, learn, and develop leadership capacity that supports STEM school development and recognition. For the November meeting, the participants were engaged in workshop on Incorporating tech in the classroom and hands-on activities in the maker space at UNC Charlotte library. For the December meeting, the participants attended the 2019 NSTA Charlotte Regional Conference.

Alisa Wickliff, CSTEM Associate Director, served as the Local Arrangements Coordinator for the 2019 National Science Teachers Association (NSTA) Charlotte Regional Conference. More than 1200 educators from this South-East region of United States attended the conference. She also planned and organized the North Carolina Science Leadership Association (NCSLA) Fall summit that was held in conjunction with the regional NSTA conference at Nascar Hall of Fame. Wickliff also serves as the Past President of NCSLA.

Through support from an I3 federal grant received by Cabarrus County Schools, the Center has been able to offer a fourth cohort of teachers an online professional development opportunity “Foundations of Problem-Based Learning”. This 45-hour professional development offering supports the district’s efforts to build a powerful STEM pipeline from Pk-12. This cohort had 18 teachers complete the online professional development.

The Center offered a two day professional development for teacher assistants in Gaston County Schools focusing on Engineering is Elementary (EiE) Curriculum. The workshop was led by Alisa Wickliff, Associate Director (CSTEM) and Premkumar Pugalenthi, STEM Education Specialist (CSTEM). Teacher assistants were trained on using the EiE curriculum in their Innovation Station Series. Wickliff and Pugalenthi also provided consultation to Gaston County Schools district’s Instructional Technology Facilitators on how to pace the EiE curriculum for the Innovation Station Series.
Review of Our Work

394 HOURS through CSTEM provided professional development, coursework, enrichment activities, consultation with faculty, competitions, and other support

2699 NUMBER OF INDIVIDUALS SERVED through CSTEM activities and events

Number of Individuals served through CSTEM activities and events
# Grants

<table>
<thead>
<tr>
<th>Awarded Grants</th>
<th>Amount</th>
<th>Funder</th>
<th>PI</th>
<th>Co-PIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEOP Strategic Partner Grant</td>
<td>$50,000</td>
<td>AEOP</td>
<td>Alisa Wickliff</td>
<td>Lisa Rhodes/SMT</td>
</tr>
<tr>
<td>NC JSHE</td>
<td>$21,000</td>
<td>Triservices</td>
<td>Alisa Wickliff</td>
<td>Dr. David Pugalee</td>
</tr>
<tr>
<td>Noyce 49er Teach</td>
<td>$698,123</td>
<td>National Science Foundation</td>
<td>Dr. David Pugalee</td>
<td>Dr. Kathy Asala, Chemistry; Dr. Pedram Leilabady, Physics; Dr. Michelle Stephan (MDSK; Mathematics); Dr. Warren DiBiase (MDSK)</td>
</tr>
<tr>
<td>Noyce Culturally Responsive Teaching (CReST)</td>
<td>$1,194,928</td>
<td>National Science Foundation</td>
<td>Dr. Anthony Fernandes (Mathematics)</td>
<td>Dr. Kim Harris (Mathematics) &amp; Dr. David Pugalee</td>
</tr>
<tr>
<td>Collaborative Research: Broadening Participation with the STEM Ecosystem, Developing a Scalable Model Using a RPP Approach</td>
<td>$497,176</td>
<td>National Science Foundation</td>
<td>Dr. Mary Lou Maher (Computing and Informatics)</td>
<td>Drs. Mohgsen Dorodchi, Lijuan Cao &amp; Audrey Rorrer (Computing and Informatics), Dr. David Pugalee</td>
</tr>
<tr>
<td>5E Model of Professional Development in Science Education for Special Educations</td>
<td>$270,764</td>
<td>US Department of Education</td>
<td>Dr. Shawnee Wakeman (PI, Special Education and Child Development)</td>
<td>Dr. David Pugalee</td>
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<tr>
<td>AEOP REAP</td>
<td>$6,500</td>
<td>AEOP</td>
<td>Dr. David Pugalee</td>
<td>Dr. Shagufta Raja, Alisa Wickliff</td>
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<td>NC JSHE Supplemental Funding</td>
<td>$13,161</td>
<td>AEOP</td>
<td>Alisa Wickliff</td>
<td>Dr. David Pugalee</td>
</tr>
</tbody>
</table>

## Grant Evaluation

Dr. David Pugalee

- Camp Invention, Burroughs Welcome Fund, Charlotte-Mecklenburg Schools
- IPASS, National Science Foundation, College of Computing and Informatics
- UNCC S STEM Engineering Academic Pathways, National Science Foundation, College of Engineering
STEM Contributors of the Quarter

Faculty Member
Dr. Warren Dibiase, Associate Professor of Science Education
Department of Middle, Secondary, and K-12 Education
Dr. Warren J DiBiase responsibilities involve the preparation of middle/secondary science teachers at the graduate and undergraduate level. DiBiase is a past chair of the department. Dr. DiBiase’s research interest focuses on the teaching and learning of science, especially those learning episodes taught by inquiry. Dr. DiBiase has been very involved with Center for STEM education activities namely judging at Regional Science and Engineering Fair, Regional Science Olympiad, NC JSHS, Science Expo and Catawba River STEM Festival. Dr. DiBiase has actively provided hands-on learning experiences for his preservice teachers by encouraging them to participate in center run activities and events.

K-12 Teacher
Jennifer Snyder, STEM Coach
Oakboro Choice STEM School
STEM Coach Jennifer Snyder brings her love of science to the scholars at Oakboro Choice STEM School. She studied Natural Resource Management at UNC Wilmington and began a career in the NC State Park System before becoming a Science Educator. Through her work, Oakboro Choice STEM School has received over $40,000 in community grant support. Ms. Snyder is currently involved in the UNC Charlotte Center for STEM education’s STEM PLC. She has increased her knowledge of STEM Education through her engagement in STEM activities, hands-on interaction with new educational technology, and collaboration with other professionals, all made possible by the PLC. Participation in this Professional Learning Community continues to support Ms. Snyder in her pursuit of receiving STEM Recognition for Oakboro Choice STEM school from North Carolina Department of Public Instruction.

Employee
Premkumar Pugalenthi, STEM Education Specialist
Center for STEM Education
Premkumar Pugalenthi is a fourth year PhD student in Curriculum and Instruction in Mathematics Education at the University of North Carolina at Charlotte. He received his Master’s degree in Mechanical Engineering, in December 2012 from the UNC Charlotte College of Engineering. After which he has worked as the STEM Education specialist in UNC Charlotte Center for STEM Education and contributed in designing and developing Engineering and Technology integrated curricula for K-12 classrooms, providing professional development for in-service and pre-service teachers, and conducting research to better understand STEM integration. His research work has been presented in international and national conferences around the world and is published at reputed journals. He also teaches Robotics to middle and School students at the Center for STEM education’s Summer Robotics Camp and STEM pre-college program.
PUBLICATIONS


PRESENTATIONS


Selected Activities

40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Premkumar Pugalenthi, Student Volunteer

Cabarrus County School STEM Advisory Board, David Pugalee, Member

Charlotte Engineering Early College (CEEC) Advisory Board, Charlotte-Mecklenburg Schools and University of North Carolina Charlotte, NC, David Pugalee, Member

College of Computing and Informatics Undergraduate Task Force, David Pugalee, Member

Council for the Accrediation of Educator Preparation, David Pugalee, Team Chair, Site Visits

Expanding Magnet Program Options, Widening Educational Reach, Cabarrus County School, David Pugalee, I3 Grant Advisory Committee

Mathematical Investigations Review Panel, Illinois Mathematics and Science Academy, Chicago, IL, David Pugalee, Member

Mathematics Educator for the Future Project, David Pugalee, International Programme Committee

North Carolina Science and Engineering Fair Foundation Board, Alisa Wickliff, Regional Director

North Carolina Science Leadership Association Board/Executive Board, Alisa Wickliff, Past President

North Carolina Science Olympiad Board, Alisa Wickliff, Board Member & Communications Chair

North Carolina STEM Alliance Governing Board, Central Piedmont Community College, Charlotte, NC, David Pugalee, Member

School Science and Mathematics Journal, Premkumar Pugalenthi, Peer Reviewer

Strengthening Claims-based Interpretations and Uses of Local and Large-Scale Science Assessment Scores, David Pugalee, Technical Advisory Committee

Symposium on Elementary Mathematics Education, David Pugalee, International Advisory Board
Center Personnel

Dr. David Pugalee
Director
(704)687-8887 (Office)
david.pugalee@uncc.edu

Ms. Alisa Wickliff
Associate Director
(704)687-8818 (Office)
abwickli@uncc.edu

Dr. Shagufta Raja
Director Pre-College STEM Program
(704)687-8728 (Office)
sraja1@uncc.edu

Dr. Ian Binns
Director, Summer Ventures in Science and Mathematics
(704)687-8820 (Office)
ian.binns@uncc.edu

Yolanda Brown
CSTEM Administrative Associate
byolanda@uncc.edu

Lorena Hatcher
Assistant Coordinator, Pre-College STEM Program
lorena.hatcher@uncc.edu

Robin Hancock
Advanced Placement Coordinator
apsi@uncc.edu

Angela Juan
Summer Ventures Administrative Support
hjuan@uncc.edu

Cathy Oldaker
Pre-College Administrative Support
coldake1@uncc.edu

Premkumar Pugalenthi
STEM Education Specialist
ppugalen@uncc.edu

Sarah Smith
Special Projects Coordinator
sarsmith@uncc.edu

Lasonja Walker
Center Administrative Support Associate
lasonja.walker@uncc.edu

www.facebook.com/
unccharlottecenterforstemeducation

UNC Charlotte, Center for Science, Technology, Engineering, and Mathematics (STEM) Education
College of Education Building, Suite 222
9201 University City Blvd.
Charlotte, N.C. 28223-0001
(704) – 687-8816