ORIGIN AND OVERVIEW OF STEM

Economic Impacts

- Job growth in STEM fields continues to increase at a far greater rate than that of non-STEM professions.
- This growing demand for STEM professionals has been met with a declining number of STEM workers.
- At the same time, achievement scores show our students falling behind in STEM subjects, with the U.S. ranking 31 in science and 23 in math among industrialized nations.
- While recent years have shown an increase in the number of college students planning to major in STEM fields, STEM majors graduate at far lower rates than their non-STEM classmates.

STEM Curriculum

- Originally developed by the National Science Foundation, the STEM curriculum targets inquiry-based learning to accelerate student achievement in science, technology, engineering and math.
- By teaching students through hands-on experiences, STEM develops deep conceptual understanding of the academic material as well as soft skills needed in the workforce.
- Arts integration into the STEM Curriculum cultivates student collaboration, creativity, imagination and communication. Skills developed through the creative arts transfer to the problem-solving and critical thinking capabilities needed for core STEM subjects.
- Interaction with STEM professionals in the classroom and at regional businesses give students the opportunity to solve real-world problems and shift their thinking to the practical applications of the academic material.
- Integration of various technical platforms and software applications prepares students to adapt to a changing technological environment.

NATIONAL, STATE AND LOCAL LEVELS

National and State STEM Initiatives

- The U.S. Department of Education has targeted STEM as a priority in its economic development goals.
- National STEM programs aim to increase STEM literacy, accelerate STEM education and expand STEM career opportunities for underrepresented groups.
- The 100K in 10 initiative seeks to prepare 100,000 STEM teachers for our nation’s schools over the next decade. Our government has invested more than $3 billion in STEM activities across all federal agencies.
- Tennessee’s successful Race to the Top bid targeted STEM as one of its four key areas of educational focus. The state’s Education Commission has established the Tennessee STEM Innovation Network (TSIN) to share best practices and boost student achievement in STEM fields.

Local Coordination of STEM Efforts

- The Southeast Tennessee STEM Initiative is a collaborative partnership among K-12 education, businesses, post-secondary institutions and community organizations with the purpose of expanding STEM education and addressing regional workforce needs.
- This Initiative of over 50 regional supporters is led by five key partners: Public Education Foundation, Hamilton County Schools, Chattanooga State, Chattanooga Area Chamber of Commerce and University of Tennessee at Chattanooga.
- In March 2012, TSIN awarded the STEM initiative a $1.85 million grant to establish a new STEM school and STEM Innovation Hub in Southeast Tennessee.
- The Southeast Tennessee STEM Council provides vision and thought leadership to our regional STEM Initiative and represents communities, schools districts and industries throughout the 13-county area.
HAMILTON COUNTY STEM PROJECT

Hamilton County STEM High School

- In August 2012, 75 freshman will become the inaugural class of the Hamilton County STEM high school, located in a new, high-tech facility adjacent to the Wacker Institute on the campus of Chattanooga State.

- Students at all levels of academic achievement submitted applications to the STEM school. All HCDE high schools were allocated slots based on student population. The seats were filled through an open lottery.

- Dr. Tony Donen, nationally recognized education administrator and author of two books on innovative academic measurement, will serve as the new school principal.

- The keystone of the platform school is a curriculum model focused on Science, Technology, Engineering, the Arts, Mathematics, & Medicine (STEAM²).

- The student experience will be rooted in problem-based learning, an educational approach through which students explore real-world challenges and shift their thinking to the practical applications of the academic material.

- The new STEM school will serve as a demonstration site for innovative practices in STEM education and incubate a curriculum and partnership program which can be implemented in schools throughout the region.

Southeast Tennessee STEM Innovation Hub

- The STEM Hub develops formalized partnerships focused on advancing STEM education throughout Southeast Tennessee. Four core areas of strategic focus have been defined:
  - Train educators in STEM best practices
  - Engage business partners in student learning
  - Inform citizens of STEM’s economic and career benefits
  - Share STEM innovations across the region

- The STEM Education Partners program will bring students and professionals together to bridge conceptual learning with real-world application of STEM subjects.

- STEM Teaching Fellows and other educator training programs will develop a region-wide community of STEM teachers charged with improving children’s knowledge and skills in STEM subjects.

- The STEM Hub will orchestrate communication and develop a common purpose among STEM stakeholders in Southeast Tennessee through events such as the Superintendent STEM Summit, Nonprofit Roundtables and the STEM Speaker Series.

- A regional STEM resource web site will disseminate STEM best practices and resources to educators, students and community members.

TIMELINE AND TARGETS FOR MEASURING SUCCESS

- The Southeast Tennessee STEM Initiative defined clear goals and outcomes for the next two years of STEM school and STEM Innovation Hub programs within its TSIN grant proposal.

- State evaluation of STEM programs in K-12 education, the business community and higher education will be administered in August 2012, January and June of 2013, and January and May of 2014.

- School and STEM Hub site visits will be conducted from 2012-2014 to observe our region’s STEM programs, resources and community events.