

Testimony for US House of Representatives
Committee on Science and Technology

Texas A&M University- Commerce
Dr. Dan Jones, President

Chairman Gordon, Congressman Hall, Committee Members, other honored guests, we greatly appreciate the opportunity to testify at this hearing on regional innovation in Northeast Texas. Texas A&M University-Commerce plays an essential role in the continuing development of science and technology in Northeast Texas through innovative partnerships with industry and effective collaborations with community colleges and public schools. These efforts are vital as we strive to support the economic vitality of Northeast Texas and our nation. Key to the success of many of our initiatives is the constant support that Representative Hall extends to the university. A number of initiatives have been successfully implemented at our university that strengthen the ties between education and industry and will help to fulfill the mission of our institution as well as the intent of the Committee on Science and Technology.

Nationwide, universities and agencies are focused on Science, Technology, Engineering, and Mathematics or “STEM” initiatives. At A&M-Commerce, we have added another very important letter to the STEM acronym: E for Education, in the formation of our STEEM project. With funding from the Greater Texas Foundation, Project STEEM focuses on enabling teachers and students to enhance their science, technology, education, engineering, and mathematics skills through project-based activities with scientists and research faculty at the university. The project includes two summer camps known as the X-Teems Academy and the Infinity Institute. We are tracking participants to monitor college matriculation rates and persistence in STEM fields. Two of our STEEM students have received full scholarships for four years to attend MIT. These are students from small rural communities in Northeast Texas. We will work this year to disseminate and replicate the STEEM model to bring more opportunity to rural areas.

We have secured grants from several Federal agencies, including the National Science Foundation, which focus on increasing the number of students, especially at the K-12 levels, who aspire to careers in STEM areas. Our faculty work closely with K-12 teachers and students to expose them to cutting-edge research and the benefits to society. In only its first year, the Maximizing Motivation-Targeting Technology (M2T2) project funded through NSF Innovative Technology Experiences for Students and Teachers (ITEST) initiative has increased STEM skills in middle school students and the motivation to excel in math and science. Video game technology is the motivation and high-level physics and other science concepts are explored in summer science camps. Fifty students are served each year in the M2T2 project and 35 teachers are pursuing a master’s degree in science or math. Surveys of student participants in both the

STEEM and M2T2 programs indicate that a greater number of students are now considering careers in STEM fields which will positively impact the STEM workforce in our region. Teachers report improved teaching strategies in the STEM content areas.

Partnerships with industry also support our preparation of tomorrow's STEM workforce. Through funding from L-3 Communications Integrated Systems, our faculty have developed high-performance computing methods and capabilities which will provide our faculty and students with research and educational opportunities currently not available in the area. In addition, high schools, middle schools, and charter schools in both Commerce and Greenville participated in Operation Spark, which aims to:

- foster an interest in math and science among students in grades 6-9,
- increase proficiency in math and science among students in grades 6-9, and
- increase teacher proficiency in math and science instruction.

There are five components to the grant: Strands, Math and Science Saturday, Family Math and Science Night, Professional Development, and Scholarship. The curriculum components of Operation Spark were developed through discussions between the A&M-Commerce project leaders and L-3 Communications Integrated Systems contacts. The Strands are taught to A&M-Commerce undergraduate and graduate students who then go into the local schools to demonstrate and teach the content to students in grades 6-12. Strands is based on the notion that college students majoring in math and science will positively impact middle and high school students due to their closeness in age and experience, which will foster both learning and a positive perception of math and science in these students. This concept is known as peer-led team learning.

Community colleges are extremely important to A&M-Commerce. In the fall of 2008, only 18% of baccalaureate graduates had entered the university as full-time freshmen, while 82% had entered as transfer students. Fifty-six percent of these graduates had completed at least 30 semester credit hours at a Texas community college. Because of these unique demographics, we have actively pursued grants to build the capacity of community colleges students to be successful when they transfer into our STEM programs. Four different projects funded through NSF support community college students, either while they are still enrolled at the community college or when they transfer to the university. These are: Course, Curriculum, and Laboratory Improvement (CCLI); Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM); Research in Undergraduate Institutions (RUI); and the Research Experience for Undergraduates (REU). Through these and other special projects, a great number of community college students have been involved in leading-edge

research activities at our campus and have gone on to pursue bachelor's and master's degrees in STEM disciplines.

Our faculty members in physics, biology, and chemistry have received additional research grants, enabling a large number of both undergraduate and graduate students to engage in cutting-edge research. This research experience has enabled these students to pursue doctoral degrees at very prestigious institutions across the state and nation.

Regional universities are sources of regional innovation. Many Tier I universities have a wonderful research focus but target their efforts toward areas supported by large donors or national needs for research. Regional universities serve the vital role of building regional capacity for innovation by having a deep understanding of the communities, the education systems, and the available resources of the regions in which they are located. Further investment will allow regional universities to implement on a larger scale proven models for summer and school year programs that inspire students. In the case of students from small rural schools, these programs offer access to well-equipped classrooms and laboratories that their home districts simply cannot afford. Our rural districts are tremendous sources of talent, and regional universities are in the best position to mine these rich veins of intellect and aspiration. We have also shown that investing in institutes and special programs for math and science teachers is important to renew their energy and encourage them to persist in their teaching fields. In addition, more opportunities for internships are also extremely important so that university students have the opportunity to apply the skills they are learning as they pursue math, engineering, and science degrees. Incentives for industry to increase accessibility for these internships is important, especially as students in the region are typically very much "at home" and plan on continuing their lives in this area and contributing to their local economies.

As a result of our commitment to improving STEM education from kindergarten through graduate school and through our aggressive pursuit of extramural funding, Texas A&M University-Commerce has increased the success of our citizens through exposure to cutting-edge research projects, state of the art equipment, and through effective faculty mentoring. Each day we prepare new generations of scientists and engineers inclusive of all demographic populations to meet the STEM workforce needs of our region, the state, and the nation.

Thank you for this opportunity and I am happy to answer any questions.