

STEM Works Facts

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STEM Works Defined

- STEM Works is a program to transform education by recognizing that future demands will be driven by the 21st-century economy. STEM Works focuses on the following: (1) preparation of STEM teachers, who are skilled in problem-based learning; (2) the creation of secondary schools designed around hands-on learning, student teams, and projects that integrate elements of the Common Core curriculum from multiple subjects; and (3) fostering 21st-century student-skills development that matches the needs of regional industry clusters.
- STEM Works has two major components: secondary education and a post-secondary component.
 - Secondary Education Component
 - (1) The **New Technology High School** model integrates STEM education and extensive project-based learning throughout the entire curriculum;
 - (2) The EAST Initiative’s **Relevant Education for Active Learning (REAL) Schools** will extend EAST-based principles into classrooms schoolwide, allowing hands-on, problem-based learning to be connected to the STEM curriculum;
 - Post-Secondary Component
 - The **UTeach** STEM teacher-preparation model recruits college students majoring in STEM disciplines to consider becoming teachers.

- Schools implementing New Tech High Schools:
 - Cross County School District (the high school is in Cherry Valley);
 - Lincoln School District in Washington County.

The goal is to have eight more schools commit for the 2012-13 school year.
- REAL Schools, an EAST initiative, is currently under development.
- The goal is to have one or more campuses apply to establish UTeach Arkansas in the state. The University of Arkansas, the University of Central Arkansas, and the University of Arkansas at Little Rock are exploring adopting the UTeach program.

STEM Works Goals

- The vision is for every high school to have a 21st-century learning environment. The short-term STEM Works goal is to have 10 high schools signed up by January 2012 to begin implementing the New Tech High School model in the 2012-13 school year. The long-term goal is to have half of the state's high schools signed up within 10 years. School districts have the option of volunteering and helping to provide funding for the STEM Works implementation.
- The vision is to increase the number of new, certified, secondary STEM teachers. The short-term goal is to implement the UTeach model of pre-service teacher preparation at one or more Arkansas campuses. The long-term goal is to prepare 1,000 new, certified, secondary STEM teachers in 10 years.

New Tech High School

- New Tech High Schools employ integrated problem-based learning throughout the entire high-school curriculum. Students use technology to facilitate their learning, while working on educational projects that incorporate curriculum elements from multiple classes. (For example, students study math in literature.) Students work in teams in open areas. Teachers act as facilitators to help students become directors of their learning processes.
- Students at New Tech High Schools experience a more hands-on educational process that better prepares them for the rigors of college and career. They develop a more rigorous and realistic approach to their studies, which is critical for student success after graduation.

REAL Schools

- REAL Schools is a division of the EAST initiative.
- REAL Schools is currently under development.
- REAL Schools will extend the principles developed by EAST for EAST labs into classrooms schoolwide, so that the EAST-proven hands-on, problem-based-learning approaches will be connected to the STEM curriculum.

UTeach Arkansas

- UTeach Arkansas is modeled after a successful program and has participating campuses across the nation.
- UTeach introduces undergraduate Science, Technology, Engineering and/or Math (STEM) majors to secondary-school teaching by recruiting students and providing an initial course at no charge.
- The short-term goal is to have UTeach at one or two campuses in Arkansas beginning in the fall of 2012 and double the participating institutions by 2014.

The 21st-Century Economy

- Nearly two-thirds of the jobs in today's economy are high-skill positions. The American workforce has fewer than half the number of qualified candidates needed to fill those positions.
- The lack of supply forces employers to choose among outsourcing jobs, importing skilled workers, or relocating operations to overseas markets, where there exists a growing supply of skilled workers.
- By 2020, three-quarters of the job market will require high-skill workers, and only 26 percent of jobs will be low-skill.
- U.S. workers prepared to fill low-skill and low-wage positions are in abundance, accounting for more than 100 million applicants competing for 61 million openings. The resulting glut of job seekers drives up unemployment and holds down wages for the nation's low-skilled workforce. (Source: The Global Talent Crisis, The Futurist. 2009 - Edward Gordon)

STEM Works Links to Industry

- Preparing home-grown talent to fill high-paying jobs in Arkansas is a must.
- The STEM workforce is recession proof. While many face cutbacks and layoffs in down economic cycles, STEM-skilled professionals remain in high demand.
- STEM professionals drive innovations that lead to new products, new companies, new jobs, and wealth creation.
- Industrial clusters of interest include the following:
 - Computer and Information Technology;
 - Nano-Related and Advanced Materials and Applications;
 - Biotechnology, Bioengineering, and Life Sciences; and
 - Agriculture, Food, and Environmental Sciences.

STEM Works Financing

- Initial implementation of STEM Works is affordable and can begin largely within existing budgets. The Workforce Cabinet agencies, for example, currently support problem-based learning, in-service professional development, and charter schools – all of which are existing educational platforms that can be aligned with STEM Works implementation. To date \$2.68 million has been committed by private business and the state.
- Governor Beebe – \$500,000 in General Improvement Funds;
- Department of Career Education – \$500,000 in project-based learning program start-up funds;
- Department of Education – \$500,000 in Technology Grants;
- Department of Workforce Services – \$500,000 from the Workforce Training Trust Fund;
- Department of Higher – \$250,000 from the federally-funded College Access Challenge Grant;;
- The AT&T Foundation has granted \$35,000;
- As many as five school districts could be eligible for a \$600,000 charter-school grant if they set up a New Tech High School as a conversion charter school.

Governor’s Workforce Cabinet

- Members of the Governor’s Workforce Cabinet include the following:
 - Governor’s Office;
 - Arkansas Department of Education;
 - Department of Career Education;
 - Department of Higher Education;
 - Department of Workforce Services;
 - Arkansas Economic Development Commission;
 - Arkansas Science and Technology Authority; and
 - Arkansas Association of Two-Year Colleges.