Welcome!

US Department of Energy

Office of Workforce Development for Teachers and Scientists (WDTS)

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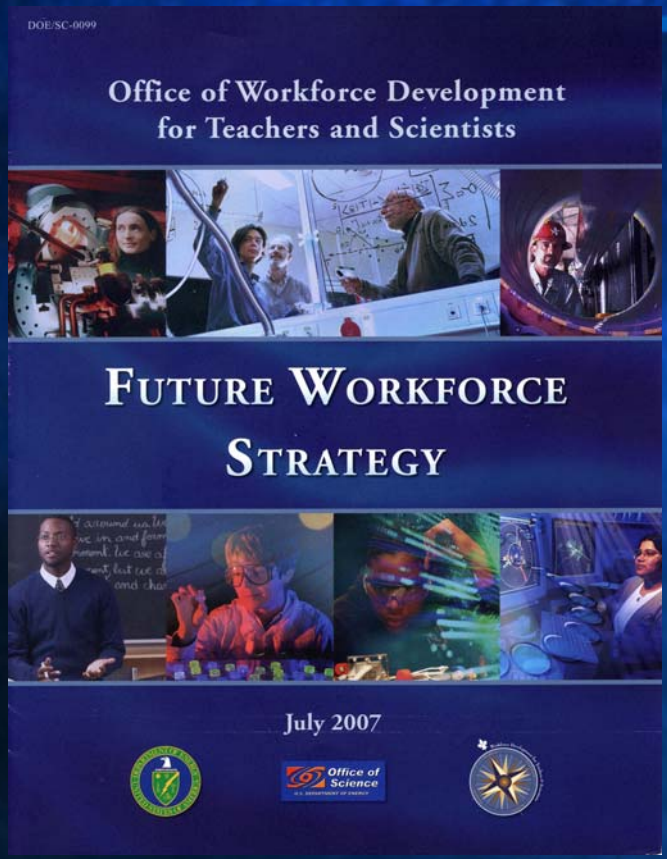
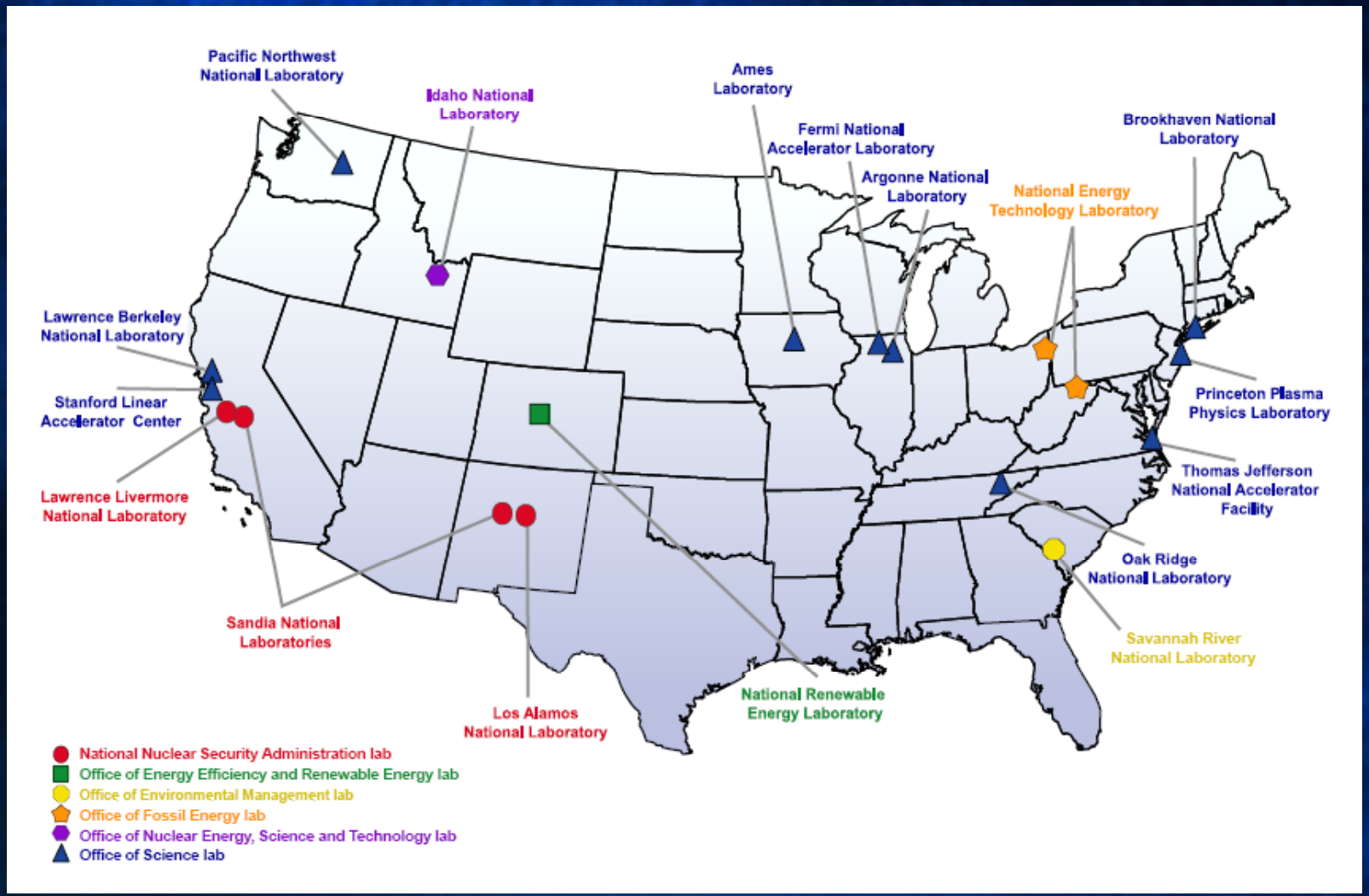
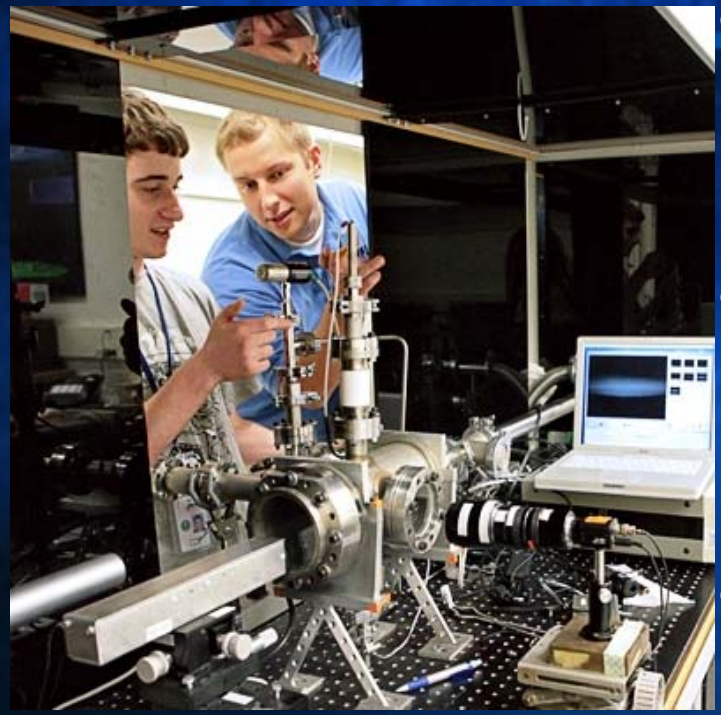


- WDTS contributes directly to the preparation of professionals in the STEM disciplines—science, technology, engineering and mathematics.
- WDTS supports a major National goal which calls for the continuing development of a core of highly trained professionals devoted to the task of keeping America at the forefront of scientific innovation and international competition.
- WDTS utilizes the unique physical and intellectual resources of the Department of Energy—through its network of National Laboratories—to achieve its goals.
- DOE's National Laboratories provide experiential learning opportunities for students and educators to help meet: (1) future workforce requirements of the DOE, (2) private sector workforce requirements, and (3) to enhance the ability of K-16 school systems to creatively and effectively teach science and mathematics.

DOE National Laboratories



WDTS Programs Emphasize Experiential Learning Opportunities



- Experiential Learning is a variation of "constructivism"— an educational theory (e.g., Jean Piaget, 1967), which argues that learning involves constructing one's own knowledge from one's own experiences.
- Constructivism values developmentally-appropriate facilitator-supported learning directed by the learner. WDTS programs depend heavily on scientist mentors and master science teachers for the facilitator role.
- Scientist mentors and master science teachers encourage students to apply new knowledge and skills in a practical real-world context— classrooms, workplaces, etc.

"In school, you have a project and the teacher knows what's supposed to happen. Here we have absolutely no idea what's supposed to happen, and we have to figure it out. Things happen all the time that defy logic!" WDTS Student Intern

WDTS Has Six Major Programs Which Address STEM Education, K-16—and Beyond

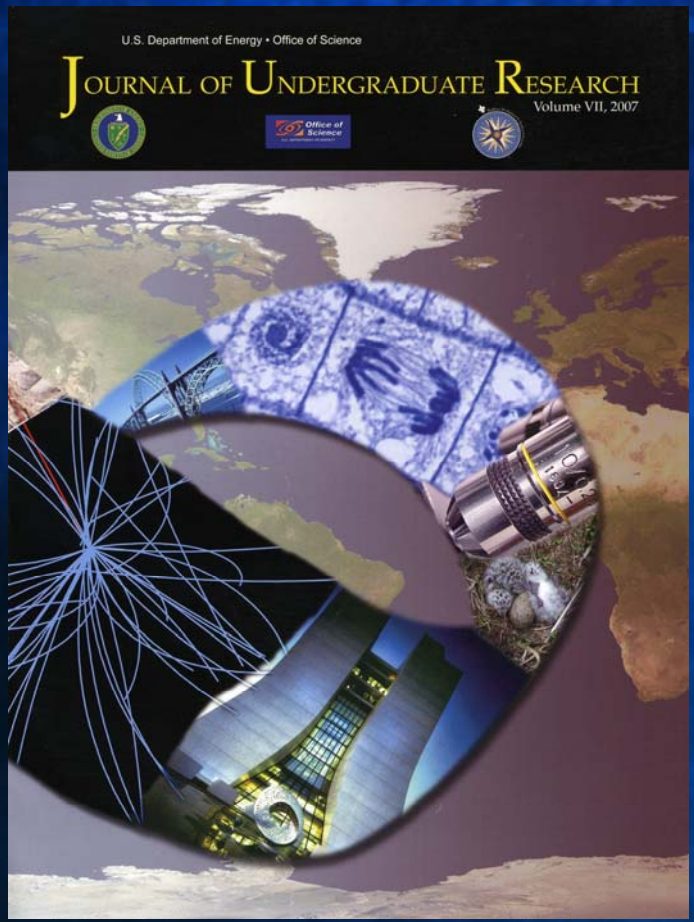
- Science Undergraduate Laboratory Internship (SULI)
- Faculty and Student Teams (FaST)
- Pre-Service Teacher (PST)
- Community College Institute (CCI)
- Academies Creating Teacher Scientists (ACTS)
- Albert Einstein Distinguished Educator Fellowship

Pre-Service Teacher (PST)

- PST is for students who are preparing for a teaching career in a STEM discipline. The program specifically addresses the national need to improve the content knowledge of STEM educators prior to entering the teaching workforce.
- PST participants include students not yet credentialed but who have declared a desire to enter the education profession.
- Laboratory experiences are designed to help PST students assimilate their undergraduate preparation before beginning their student teaching assignments.
- Seminars encourage PST students to engage in self-evaluation and provide opportunities to share instructional tools and resources designed to bring knowledge gained from their laboratory experiences into their classrooms.

"Doing science in the laboratory provided me with confidence in the content area, showed me my strengths and weakness in the laboratory, and, most importantly for me, provided a physical example of inquiry learning and how thoroughly we know a topic when we investigate it ourselves." PST Student

Journal of Undergraduate Research (JUR)



- The 2008 Journal of Undergraduate Research represents a compilation of 610 undergraduate research projects carried out under the supervision of scientists at fourteen DOE laboratories.
- Research topics range from high-energy physics to nanoscience; from hybrid electric vehicles to the determination of the optical properties of biological tissue.
- Each issue of the JUR represents substantial evidence of the extensive commitment of the DOE Office of Science to provide for basic research opportunities for young scientists.
- Through publication of the JUR the DOE makes available the work of hundreds of young scientists and their mentors who are contributing to our national security, economic well-being, and our capacity to remain on the cutting edge in a highly competitive global community.

Academies Creating Teacher Scientists (ACTS)

- ACTS primary goal is to create a cadre of STEM educators who have the content knowledge and scientific research experience needed to become leaders and agents of positive change in K-12 science education.
- ACTS requires a three-year commitment by educators who spend an intensive four to eight weeks annually at a National Laboratory working under mentor scientists to build content knowledge, research skills, and a lasting connection with the scientific community through the research experience.
- Master educators, who are also adept in both scientific research and scientific writing, act as liaisons between the mentor scientists and the educator participants. This helps the ACTS educators transfer the research experiences to their classrooms.

"I have learned so much and am excited to share my experiences with my students. In the classroom I encourage my students to ask questions, ponder new thoughts and ideas to construct their knowledge—to broaden and bring depth to their understandings."
ACTS Teacher

Albert Einstein Distinguished Educator Fellowship

- The Albert Einstein Distinguished Educator Fellowship Act was passed by the United States Congress in 1994.
- This law gives the Department of Energy (DOE) responsibility for administering a program of distinguished educator fellowships for elementary and secondary school mathematics science and technology educators.
- Since its inception, 160 educators from throughout the United States and its territories have been honored as Fellows.
- Einstein Fellows provide practical insights to policy makers and program managers. In turn, Fellows develop new knowledge about Federal resources, a deeper understanding of National education policies and issues, and make other substantive contributions to the offices in which they serve.

"I not only learned about educational programs and activities, but also a fantastic amount about the research being funded by the Federal government through the Department of Energy. It was amazing to have an insider's look at this cutting edge part of our government."
Albert Einstein Distinguished Educator Fellow

Summary

- DOE WDTS programs seek to create a cadre of STEM educators who have the proper content knowledge, connections to scientists and engineers at the National Laboratories, and mentored scientific research experiences.
- DOE national laboratories provide STEM undergraduate students and science educators with the knowledge and skills needed to improve their academic preparation, classroom instructional skills, and overall professional abilities including their capacity for future leadership roles in the STEM disciplines.
- DOE WDTS strives to build partnerships among national laboratories, colleges and universities, and private sector entities through its education programs.
- The role of WDTS in response to the political, public and private call for a new level of excellence in science education is dynamic, exciting, and challenging. We remain committed to our mission to design and facilitate the implementation of world-class, experienced-based research learning opportunities for undergraduate students and educators.

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