

## Science City Adventure (SCA) Project.com

A consortium among Oak Ridge National Laboratory, Oak Ridge Associated Universities, The University of Tennessee, and others

This east Tennessee adventure would be a year round program that engages participants of all ages in hands-on problem solving. The team projects are designed to foster learning about how technology can address societal problems. Participants use logic, experiments, and advanced tools to explore the ramifications of alternative choices in addressing energy, health care, transportation, and other technology issues.

Each program runs from 2 to 7 days and follows a curriculum designed to allow active learning and real engagement targeted to the age of the participants (be they middle school, high school, undergraduate, teachers, or elders).

The camp addresses major societal concerns:

- an insufficient number of U.S. students, particularly minority students, majoring in science, technology, engineering, and mathematics (STEM) in college;
- the need for hands-on training of teachers;
- an increase in the global demand and competition for STEM graduates as a result of technological development in other countries;
- the perceived disconnect between science and society.

The Science City Adventure builds upon key attributes of its participant organizations:

- Oak Ridge National Laboratory (ORNL) conducts basic and applied research and development to create scientific knowledge and technological solutions.
- Oak Ridge Associated Universities (ORAU) is uniquely positioned to leverage, through its consortium of 105 sponsoring institutions, the expertise of major research universities.
- The University of Tennessee (UT) is a sun-grant and land-grant institution that provides strengths in fostering education, outreach, and research.

**The Science City Adventure:** Visualize a place where students, educators, and others will come to learn through hands-on involvement in authentic research at ORNL, using advanced technologies.

Communication and information technologies will be used along with the physical and environmental resources of the Tennessee Valley Corridor, a region steeped in science and technology and committed to pursuing solutions to energy, national-security, environmental, and other national issues. Working in both indoor and outdoor research environments, participants will engage in creative problem solving as they work directly with nationally recognized scientists. Simulation, visualization, and remote access to laboratory resources will be used as ways for participants to collect data, analyze information, communicate their results, debate findings, and disseminate the results of their research. What's more, when they leave the program, they will continue to have access to the program's resources through Web-based applications and networking systems. The experience will be both personal and motivating. It will increase science literacy and encourage students to pursue degrees and careers in critical science and technology fields.

The primary purpose of SCA is to provide a setting for groups of middle and high school students, teachers, Elderhostel participants, and others to engage in intensive, challenging, and enjoyable hands-on science experiences. The programs will introduce the participants to scientific methods for examining real-life problems, to scientists who are looking for solutions to important problems, to the modern

technologies they use, to science's contributions to 21<sup>st</sup>-Century life, to science's need for new practitioners, and to the educational requirements of scientific and technical careers. The programs will include laboratory and field work led by science mentors, visits to ORNL and the UT Arboretum, trips to advance scientific and technical facilities, a platform to contribute to and access scientific data at those laboratories and facilities, analysis of those data in ORAU's classroom of the future, and evaluation of the analyses with other participants and mentors.

The Science City Adventure would

- Engage students, educators, and others in exciting, highly motivating areas of science and technology;
- Offer hands-on participation in authentic, laboratory-based research projects from an offsite location;
- Provide career-development opportunities for educators, particularly those teaching middle school and high school math and science courses;
- Increase science literacy, particularly as it relates to the science and technology being developed at ORNL, UT, and associated institutions;
- Demonstrate the important role of science in modern life;
- Increase awareness of career opportunities in STEM fields;
- Encourage students to pursue degrees and careers in critical science and technology fields.

**Business vision:** The camp would become financially self-sustaining through tuition, grants, and corporate sponsorships. It would build from its 2009-2012 pilot that focused on middle school students and teachers and "underrepresented" groups from 13 states in Appalachia. The long-term business plan would leverage the science and technology skills of its partners to provide a set of learning modules for national and international outreach.