

OVAE CONNECTION

Report on Successful K-12 STEM Education (Part of a Continuing Series)

The Sept. 8 issue of *OVAE Connection* outlined the first goal of STEM education from the report, *Successful K–12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering and Mathematics* by a committee of the National Research Council, part of the National Academy of Sciences. The second goal set by the Committee is:

Goal 2. Expand the STEM-capable workforce and broaden the participation of women and minorities in that workforce. The Committee identified a two-fold objective with regard to expanding the STEM-capable workforce. As we noted last week, increasing the number of STEM-capable workers with advanced degrees in the STEM disciplines is essential if the U.S. is to retain its role as a leader in innovation in the 21st century. Equally as important for the health of the U.S. economy, is increasing the “number of people who are prepared for STEM-related careers, such as being K–12 teachers in the STEM disciplines, medical assistants, nurses, and computer and green energy technicians.” According to the committee’s report, these careers typically require a vocational certification attesting to specialized STEM knowledge, an associate degree, or a baccalaureate degree in a STEM field. They do not necessarily require an advanced degree. (See [The STEM Workforce Challenge: The Role of the Public Workforce System in a National Economy for a Competitive Science, Technology, Engineering, and Mathematics \(STEM\) Workforce, 2007](#), cited in the committee’s report.)

The current demand for STEM-capable workers exceeds the supply of persons who have been trained in STEM fields. The opportunities for these STEM-trained workers are significant. According to Lacey and Wright, cited in the report (see [Occupational Employment Projections to 2018](#)), “16 of the 20 occupations with the largest projected growth in the next decade are STEM related, but only 4 of them require an advanced degree.” In light of these projections, the committee concluded that “[g]iven these unmet needs for a STEM-capable workforce, the nation’s economic future depends on preparing more K–12 students to enter these fields.”

In addition to this goal and goal 1, which was discussed last week (*Expand the number of students who ultimately pursue advanced degrees and careers in STEM fields and broaden the participation of women and minorities in those fields*), the committee identified a third, broader reason for emphasizing STEM education in our system of education.

Goal 3. Increase STEM literacy for all students, including those who do not pursue STEM-related careers or additional study in the STEM disciplines. In its deliberations, the committee reached the judgment that “[p]ersonal and societal decisions in the 21st century increasingly require scientific and technological understanding. Whether about health, the environment, or technology, a certain level of scientific knowledge is vital to informed decision making.” Increasing STEM

Online Discussion on Strategies for Research-Based Writing Instruction Scheduled

[The Literacy Information and Communication System \(LINCS\)](#) Reading and Writing Discussion List will host the online guest discussion *The Teaching Excellence in Adult Literacy (TEAL) Project and Strategies for Research-Based Writing Instruction*, on Sept. 19–23, 2011. The TEAL project is operated by the American Institutes for Research ([AIR](#)) and funded by OVAE. TEAL provides adult basic education teachers with professional development related to effective teaching, with an emphasis on evidence-based practices in writing instruction. The project has 12 participating states: California, Florida, Idaho, Mississippi, Missouri, Nebraska, New York, Oklahoma, Rhode Island, Texas, Virginia, and Wyoming. Days 1 and 2 of this discussion will provide an overview of research in writing instruction. Days 3–5 will feature TEAL teachers who will describe successes and challenges in implementing research-based writing practices.

Please access LINCS Reading and Writing Discussion [List](#) to find out more about this on-line event, including information on the guest panelists, discussion list questions, and downloadable resources. Please access [subscribe and participate](#) prior to Sept. 19, 2011, to participate in this discussion list.

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literacy—defined as the “knowledge and understanding of scientific and mathematical concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity”—is an important goal for K–12 STEM education. Targeting all students, not just those who will pursue postsecondary education or careers in STEM or STEM-related fields, will better prepare citizens to face the challenges of a science- and technology-driven society.”

The Committee’s three goals are not mutually exclusive; in fact, properly implemented, they tend to complement each other. And broad goals and intermediate steps facilitate attaining those broader ones. “Schools and districts might not consciously adopt and work toward these three broad goals for STEM education. Instead, they may have their own, intermediate goals for success.” Among those the committee acknowledges are increased enrollment in STEM courses, measuring success by test scores in STEM subjects, college and career readiness, and matriculation into postsecondary education.

Setting the goals is the easier part of the task, but attempts to reach these goals are works in progress. As the committee recognizes, “[s]cientific research provides little evidence about how to accomplish the three broad goals.” In addition, the committee notes, “[r]esearch is even limited with respect to the intermediate goals, including goals related to accountability, when success is often measured at the school or district level.”