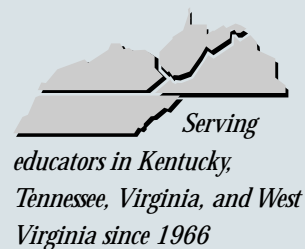


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THE LINK

A PUBLICATION FOR EDUCATION PRACTITIONERS



Onward to Excellence! Helping Schools Harvest Research

On a crisp autumn afternoon in West Virginia, students at Buffalo Grade School are in their classrooms, but four teachers and two aides are not. The principal is not in his office, either. The parent resource coordinator is not taking calls. All are gathered around a table in the school's newly created library, eating homemade chocolate chip-banana cake.

These professionals are not skipping class or neglecting their duties. They are members of the Onward to Excellence II (OTE II) School Leadership Team, and they are meeting to assess the results of two years of school improvement efforts and to plan for the coming months.

The atmosphere is relaxed, but team members cover serious ground: How have students at the school benefited from two years of school reform work? Which strategies worked well? Which didn't? What goals should be tackled next? Guiding them

through the process is a trainer from AEL's OTE II Regional Center.

AEL has been operating the center since 2000, but the OTE school improvement process itself has been around for 20 years. More than 1,000 schools across the country have used it to build capacity for improving student achievement.

Developed by the Northwest Regional Educational Laboratory in Portland, Oregon, OTE was originally based on school effectiveness research but has evolved to incorporate new knowledge about school change and effective teaching.

A Structured Process

Unlike reform models that dictate specific curriculum and instruction, OTE II is a structured process. It helps schools choose and implement improved teaching strategies while basing decisions on research and experience.

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Onward to Excellence

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Key Elements of OTE II

1. School Leadership Team—manages the change process
2. External Study Team—collects and analyzes data
3. Site Facilitator—coordinates ongoing work
4. Parents and Community—involved in decisions, provide support
5. Study Groups—examine research in school's selected goal areas
6. School District and Board—stay informed, provide support
7. OTE II Trainer—guides school through entire process

For a description of how OTE II addresses the 11 components of Comprehensive School Reform as defined by the federal government, go to www.nwrel.org/scpd/ote/csr/csrcomponents.html.

The OTE II process calls for garnering support among key stakeholders and decision makers before moving forward. A School Leadership Team is created to manage the change process. An External Study Team is established to collect and analyze data. A quarter-time site facilitator is appointed. With these supports in place, the school assesses its current status.

An OTE II trainer then assists the school as it selects an academic goal area, maps the curriculum and sees that it is aligned with state standards, examines relevant research to help form a school improvement plan, and collaborates to implement and monitor the plan. The trainer's assistance takes the form of a series of workshops over a two-year period. Trainers are also "on call" between workshops to answer questions and provide resources.

At Buffalo Grade School, staff used the OTE II process to identify two specific goal areas—improving reading skills and student behavior—and engaged parents in positive ways to help them achieve these goals.

At the end of two years, test results showed the school exceeding its annual yearly progress goals. Students made progress overall, especially in math and reading. Equally important were improvements in school climate. "I'm proud of what we've done together," says principal Ray Albright. "But it wouldn't have happened without OTE II."

Buffalo Grade School is one of 19 schools in AEL's region to adopt OTE II since the regional center opened in 2000. "Having a center nearby makes it more convenient and less expensive for schools in this region to adopt OTE II," explains AEL's OTE II coordinator, Beth Sattes.

Impact and Benefits

Research has shown that student performance improves when the OTE II model is properly implemented. Two studies conducted in the Northwest and Mississippi



Onward to Excellence II is a research-based strategy for comprehensive school improvement. AEL's Regional Center offers expert assistance to schools and districts adopting OTE II in Kentucky, Tennessee, Virginia, and West Virginia. For more information contact Beth Sattes, sattesb@ael.org or 800-624-9120, or visit www.ael.org/ote.

by NWREL, the program's developer, show that proper implementation leads to more teacher collaboration and research-based practices in schools, and that OTE schools show larger achievement gains than non-OTE schools. A study by the Mississippi Department of Education indicates that it may be most effective in high-poverty districts. Schools and districts in Oregon, Washington, Mississippi, and Alaska provide evidence that achievement scores and other student outcomes improve when OTE II is implemented with strong school and district leadership.

OTE II schools report other benefits along the way: establishment of a clear focus and common purpose, shared leadership among school staff, development of a professional learning community among teachers, alignment to state standards, family and community involvement, and improved capacity for continuous improvement.

Contact Us

For more information about OTE II, go to www.ael.org/ote or contact Beth Sattes at sattesb@ael.org or 800-624-9120.



Teaching Math Concepts is Important

From the National Center for Education Statistics

U.S. teachers must do more to help students understand the concepts of math, not just the mechanics of how to solve problems, a review of 8th-grade classes suggests. The authors said U.S. teachers spend less time than counterparts in higher-achieving countries on explaining math's underpinnings. "They're more focused on getting the answers, and less focused on giving students the opportunities to really engage in serious mathematical work," said James Stigler, chief executive officer of LessonLab, which conducted the study for the U.S. Department of Education.

The TIMSS* 1999 video study was more ambitious than the TIMSS 1995 video study. It included 638 lessons collected on videotape from seven participating countries. The 1999 study used a revised and expanded coding scheme and was based on the premise that the more we can learn about teaching as it is practiced, the more effectively educators can identify factors that might enhance student learning opportunities. The comparative nature of the study tended to draw attention to differences in teaching; however, researchers also found some shared features.

Shared Features

- Eighth-grade math was often taught (80% of lesson time) through solving problems.
- Lessons in all countries included both public, whole-class work and private, individual work.
- Lessons generally included both review of previous work and attention to new content.
- At least 90% of lessons used a textbook or worksheet.
- Teachers talked more than students, at a ratio of at least 8:1 words.

Variations Among Approaches

Researchers found distinctions in the way new content was introduced, the

coherence across mathematical problems and within their presentation, topics covered, procedural complexity, and classroom practices regarding individual student work and homework in class.

- Japanese lessons were notably different in procedural complexity, with higher percentages of moderate- or high-complexity problems. For example, a comparison of Japanese to U.S. lessons showed 17% of low-complexity problems in Japan as compared to 67% in U.S. classrooms.
- The relationship between one mathematics problem and the next in a lesson was different in Japan than other countries. To determine this, researchers identified four kinds of relationships between problems: repetition, mathematically related, thematically related, and unrelated. Study data showed that, on average, Japanese lessons contained a higher percentage of mathematically related lessons than other countries, and a lower percentage of problems that were repetitions.
- When the types of problem per lesson were examined, researchers found that Australian and U.S. lessons had students solve smaller percentages of problems in ways that actually made evident the connections among mathematical facts, procedures, and concepts.
- Mathematics problems in the Netherlands emphasized the relationships between mathematics and real-life situations to a greater extent than those in the other countries: 42% in the Netherlands as compared to the next-highest percentage of 27 in Australia (the U.S. percentage was 22).

Teaching Mathematics in Seven Countries: Results From the TIMSS 1999 Video Study was written by J. Hiebert, R.

Gallimore, H. Garnier, and colleagues. To get the report and video clip examples, visit www.nces.ed.gov/timss/video.asp or phone 877-4ED-PUBS.

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Research Notes

The U.S. Department of Education's Institute of Education Sciences funds research through regional laboratories, national centers, and field studies.

Research from the nation's 10 regional laboratories can be found on the Internet at www.relnetwork.org.

The work of the 12 national centers is available at <http://research.cse.ucla.edu>.

*Third International Mathematics and Science Study. The 1999 video study looked at lessons from Australia, the Czech Republic, Hong Kong SAR, Japan, the Netherlands, Switzerland, and the United States.



Research Notes

(continued from page 3)

Discussion-Based Instruction Supports Literacy Performance

From the Center on English Learning & Achievement (CELA)

CELA researchers recently completed a study that showed a strong relationship between discussion-based instructional approaches and challenging academic content to student literacy performance in a diverse set of schools. Rather than focus on particular instructional strategies (e.g., question-asking techniques), the study was designed to accommodate the many different ways that teachers support student literacy development through classroom discourse. Results are based on data on 974 students in 64 middle and high school English classrooms in 19 schools in 5 states.

The researchers reported that “high academic demands and discussion-based approaches were significantly related to spring performance, controlling for initial literacy levels, gender, socioeconomic status, and race/ethnicity. Moreover . . . these approaches were effective across a range of situations, for students of varying levels of academic ability.”

The study focused on three major aspects of discussion-based instruction as well as the relationship among variables and between variables and student performance. Protocols were designed to measure the extent of each classroom’s (1) dialogic approach to discussion, (2) emphasis on developing student understanding, or envisionment building, and (3) curricular cohesion.

Dialogic approach. To measure dialogic discussion, researchers used a classroom observation system designed to capture classroom discussion and related activities. Data on the types of questions asked (both by teachers and students), the classroom interactions, and the materials being used were analyzed. Researchers identified those interactions that constituted

open discussion, defined as the free exchange of information among at least three participants (which may include the teacher) that lasts longer than 30 seconds.

Envisionment building. During each classroom observation, observers rated the emphasis on *envisionment building*—instruction focused on supporting students to develop more complete and complex understandings of a text. They looked at the frequency with which students expressed opinions related to the text, and whether the teacher offered experiences that provided opportunities to raise questions, learn new ideas and skills, and explore and use the new ideas and skills in ways that lead to more elaborated understandings.

Curricular cohesion. To determine the extent to which the lesson was part of a larger conversation in the discipline, observers noted if it was part of a continuing topic, if classroom comments connected the lesson to previous or future topics, and the like. This aspect of the discussion was also measured by calculating the teachers’ ratings on a survey that asked about continuity across lessons and units or across reading, writing, and discussion activities.

High Academic Demands

To measure the amount of work expected of them, students were asked to report on (a) the nature and amount of revisions they were expected to make to their writing, (b) the hours of English homework they were assigned each week, and (c) how often they completed their reading and writing assignments. Responses were aggregated to the classroom level.

Classroom observers also noted the materials used in each lesson (e.g., fiction, nonfiction, young adult literature, poetry) and the nature of the assignments (e.g., short-answer writing, analytic writing).

Performance Assessments and Results

Three writing tasks were used to assess student performance, and student answers



were scored both for the overall sophistication of the attempted response and success in making that response. For overall difficulty, researchers scored the level of abstraction attempted—from recording factual data to theorizing. To measure students' success in their responses, raters used a four-point scale that ranged from unsatisfactory (barest of information provided) to elaborated (highly wrought, well-developed, tightly organized).

The instructional emphases in the study classrooms varied in terms of the types of reading materials and writing activities assigned, as well as in the quantity and quality of discussion-based approaches. Overall, in both middle and high schools in both urban and suburban settings, discussion-based approaches supported higher levels of student literacy growth.

Conclusion

Classrooms in which dialogic discussion, development of student understanding, and curricular conversations are evident are fundamentally different than traditional classrooms. They exhibit different views of teacher and student roles, different assumptions about effective teaching, and different ideas about what it means to do English well.

This article is based on one written by Janet Angelis of CELA. It describes "Discussion-Based Approaches to Developing Understanding: Classroom Instruction and Student Performance in Middle and High School English," by A. N. Applebee, J. A. Langer, M. Nystrand, and A. Gamoran for the American Educational Research Journal (Fall 2003, <http://www.aera.net/pubs/aerj>). For more about CELA research, visit <http://cela.albany.edu>.

Allocating Resources in High-Poverty Schools

From the Peabody Center for Education Policy

Research has shown that substantial achievement gaps are often observed at the end of third grade in high-poverty schools. To help these schools target resources

effectively to improve student achievement, researchers recently performed a supplementary analysis of data from the Longitudinal Evaluation of School Change and Performance (LESCP) in Title I Schools. The data analyzed were collected in 1997, 1998, and 1999 from 71 high-poverty Title I schools, located in 18 districts across seven states, where standards-based reforms had begun. The analysis incorporated student-achievement trajectories, student-level attributes, and school-level attributes.

Key Findings

- Higher initial reading achievement was associated with a standards-based curriculum, teacher perceptions of professional development as relevant, reading teachers having second language ability, schools with standards and consequences in their plans, and support from regional technical assistance centers.
- Higher initial math achievement was associated with a standards-based curriculum, external support, more frequent student assessment, and standards and consequences in school and district plans.
- Lower reading achievement was associated with larger class size.
- Lower math achievement was associated with use of multiple strategies to address instructional needs.
- Math achievement *gains* (reading gains were not reliable) were associated with high-quality and increased professional development, state-certified teachers, teacher belief in assessment, written parent compacts, and targeted assistance programs.

Descriptive data revealed that higher achievement was associated with greater teaching experience and longevity in the present school, less use of multiple-choice tests, and state certification.

School poverty was found to have a substantial effect on achievement, *independen-*

Research Notes

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Resources of Interest

Hooking Students with Forensics

A recent generation of TV shows has spawned a new direction in science teaching. By using forensics as a hook, science teachers can spark student interest in science. The subject matter results in “hands-on, minds-on” science lessons that excite students, teach key biology and chemistry concepts, and suggest possible careers.

Forensic units are available as part of Court TV’s *Forensics in the Classroom* (FIC) educational science initiative, developed in partnership with the American Academy of Forensic Science. FIC was launched in 2002.

A new high school unit, the Cafeteria Caper, takes students on an investigation to identify the culprit who vandalized the school cafeteria. Students conduct enzyme tests and hair analyses and learn how to analyze DNA, chromosomes, and blood. Students develop basic skills in observation and data collection and analysis, learn the properties of organic molecules, identify uses for chemical indicators, understand and perform scientific inquiry, and more. Suitable for forensics, chemistry, biology, and physics classes, the curriculum includes three independent lab units.

Free science units for elementary, middle, and high school science teachers are available at www.nsta.org/resources or www.courttv.com/forensics_curriculum.

Preparing Urban Teachers: A Community Curriculum

The Urban Teacher Training Collaborative (UTTC) is a Master of Arts in Teaching program developed by Tufts University in conjunction with three small Boston public schools (Boston Arts Academy, Fenway High School, and Mission Hill School). Since January 2002, the collaboration has refined and expanded its efforts to deeply acquaint student teachers with the diverse communities and cultures from which their students come.

Preparing Urban Teachers, by Eileen Shakespear of Fenway High School, Linda Beardsley of Tufts University, and Anne Newton of Jobs for the Future, documents a series of UTTC seminars. To download *Preparing Urban Teachers*, go to www.jff.org/jff/kc/library/0200.

The Genome Project in Multimedia

To help students learn about the Human Genome Project, a Web site and CD-ROM have been compiled by IDI Multimedia, Henninger Media Services, and the National Human Genome Research Institute. Several modules provide background information on genetics, genome sequencing, and the project. They incorporate three-dimensional animation of molecules, cells, and DNA; an interactive timeline of genetics; suggested classroom activities; and a glossary of terms.

The materials for *Exploring Our Molecular Selves* may be downloaded or viewed online at www.genome.gov/Pages/EducationKit. To order the free multimedia kit that includes the CD-ROM, visit www.nhgri.nih.gov/education.

NETS*T Certificate Program

The International Society for Technology in Education (ISTE) and PBS TeacherLine are collaborating on a certificate program that recognizes educators who have met the ISTE National Educational Technology Standards for Teachers (NETS*T). Teachers will earn the PBS TeacherLine ISTE NETS*T Certificate of Proficiency by completing a series of performance tasks. The online program allows teachers to demonstrate their use of technology for assessment and evaluation, curriculum and instruction, planning learning environments, and professional development.

The certificate program is slated to be offered nationally in early 2004. PBS

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TeacherLine, funded by a grant from the U.S. Department of Education, provides professional development through online facilitated courses that meet state and local standards, supportive and collaborative learning communities, and exemplary Internet-based resources. More information is available at www.pbs.org/teacherline.

Science WebNews Analysis

The National Science Teachers Association (NSTA) recently launched *WebNews Analysis*, a new feature that offers science educators a concise collection of online news articles. The items come from a variety of sources, are gathered from recent news, and focus on specific issues of importance to science teachers. The service provides a one-stop resource to help teachers monitor current issues in education, teaching strategies, and science content. WebNews Analysis goes online as part of the NSTA News Digest on the last Friday of each month. To learn more, go to www.nsta.org/webnewsanalysis or send e-mail to kcollins@nsta.org.

Edison Science Experiments

The Edison Electric Institute offers free science-teaching experiments designed to stimulate an interest in science and technology among elementary school students through easy-to-perform experiments in basic scientific concepts.

The 82 experiments enhance science curricula in grades 4 to 8 and use readily available materials. Approximately 60,000 kits describing the experiments have been distributed nationwide since the program was instituted. Chapter topics include energy conservation, alternative energy sources, energy for the future, inventor Lewis Howard Latimer, and static electricity.

The kits have been converted to electronic format so teachers can download, print, and copy them for students. Complete a simple registration form before download-

ing the files, and fill out a “report card” after evaluating or using an experiment so the fund can measure the effectiveness of the Science Teaching Experiment program.

To find out more, visit www.charlesedisonfund.org/Experiments/experiments.html.

Differentiating Practice in the Middle Grades

A recent publication from the Association for Supervision and Curriculum Development presents an overview of theory, practice, and resources for differentiating instruction. The book, by Carol Ann Tomlinson and Caroline Cunningham Eidson, also includes six units of study that cover several content areas: science, social studies, language arts, algebra, and French.

The authors offer a set of principles to help teachers practice differentiation.

Fostering Equity and Excellence in Academically Diverse Learners

Good curriculum comes first. The teacher’s first job is to ensure a coherent, important, inviting, and thoughtful curriculum.

All tasks should respect each learner. Every student deserves work that is focused on the essential knowledge, understanding, and skills targeted for the lesson. Every student should be required to think at a high level and should find his or her work interesting and powerful.

When in doubt, teach up! Good instruction stretches learners. The best tasks are those that students find a little too difficult to complete comfortably. Offer a support system to facilitate the student’s success at a level that he or she doubted was attainable.

Use flexible grouping. Find ways and time for the class to work as a whole, for students to demonstrate competence alone, and for students to work with varied groups

Resources of Interest

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Find Out What Works

The U.S. Department of Education’s Institute of Education Sciences established the What Works Clearinghouse to provide educators, policymakers, and the public with a central source of scientific evidence of what works in education. Still in a formative stage, the clearinghouse is beginning to “stock” its Web site.

To consult the clearinghouse, and to nominate areas for it to review, go to www.w-w-c.org. Or, send e-mail to wwcinfo@w-w-c.org, phone 866-WWC-9799, fax 301-519-6760, or write to What Works Clearinghouse, 2277 Research Blvd., MS 6M, Rockville, MD 20850.

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Resources of Interest

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of peers. Using only one or two types of groups causes students to see themselves in more limited ways, keeps the teacher from “auditioning” students in varied contexts, and limits potentially rich exchanges in the classroom.

Become an assessment junkie.

Everything a student says and does is a potential source of assessment data. Assessment should be an ongoing process, conducted in flexible but distinct stages. It should maximize opportunities for a student to open the window on his or her learning.

Grade to reflect growth. The most we can ask of any person—and the least we ought to ask—is to be and become their best. The teacher’s job is to guide and support the learner in this endeavor. Grading should, in part, reflect a learner’s growth.

These principles have been condensed from *Differentiation in Practice: A Resource Guide for Differentiating Curriculum, Grades 5–9*, by Carol Ann Tomlinson and Caroline Cunningham Eidson (ASCD, 2003). The book costs \$24.95 for members and \$29.95 for nonmembers. To read more or place an order, visit www.ascd.org/publications.

Planning Personal Professional Development

It only makes sense to plan personal learning as carefully as student learning. To help teachers create personal plans with explicit goals, the Eisenhower National Clearinghouse and the National Staff Development Council have developed a guide and planning template. The guide offers these steps to planning (this is an

abbreviated version):

- Step 1. Find out if your district has a planning format and/or requirements that you should follow.
- Step 2. Review the components of good professional development.
- Step 3. Clarify your goals.
- Step 4. Use a template to develop your plan.
- Step 5. Decide on the activities or strategies you will include to accomplish your goals.
- Step 6. Evaluate your plan.
- Step 7. Reflect early and often.
- Step 8. Create a portfolio of your accomplishments.

Get the full version of this planning tool and other resources on *By Your Own Design*, a Web site and CD-ROM. The Web site is at www.enc.org/pdguide and the CD-ROM may be ordered from the bookstore at www.nsd.org.

Resilience, Well-being, and Achievement

A recent *R&D Alert* from WestEd presents information on resilience, well-being, and student achievement, and suggests approaches that might strengthen healthy youth development. Researcher Bonnie Benard discusses resilience and dispels myths and misunderstandings about this human capacity.

Benard refutes the following myths:

Myth #1: Some people are resilient, others are not.

Myth #2: Identifying sources of “risk” for children is more important than focusing on their resilience.

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AEL is the first education institution in the world to use Digimarc MediaBridge technology, which employs digital watermarks to instantly link printed materials with the World Wide Web. You can recognize an Internet-enabled page by the symbol you see at the right and in the blue bar below.

Most pages of *The Link* contain an image (a star) embedded with a Digimarc. When you hold the star up to a digital camera connected to your desktop computer, the Digimarc MediaBridge software reads the watermark, activates your Web browser, and delivers AEL’s Web site to your screen. From there, you will be able to launch related Web sites and access a wealth of information—without typing long URLs.

To explore this technology, go to www.digimarc.com to download the free Digimarc MediaBridge software.



Myth #3: Young children are resilient but gradually grow less so as they age.

Myth #4: Skills programs can strengthen resiliency.

To support young people, and to engage and strengthen their resiliency, Benard proposes focusing on what she calls “the big three”: caring relationships, high expectations, and opportunities for meaningful participation and contribution.

To read the *R&D Alert*, visit www.wested.org/pub/docs/resources_newsletters.htm.

A recent report from the Center for Research on Education, Diversity & Excellence also addresses resiliency. It reviews classic and more recent studies of resilient students—those who succeed in school despite the presence of adverse conditions. This report focuses on how results of such studies might lead to improvements in educating students at risk of failure, examines issues related to the definition of resiliency, and discusses implications for educational practice and research. *Review of Research on Educational Resilience* by Hersh C. Waxman, Joh P. Gray, and Yolanda N. Padrón costs \$5.00 and can be ordered online at www.cal.org/crede/pubs.

Understanding NCLB: Highly Qualified Teachers

The U.S. Department of Education offers a new tool kit to help educators understand the “highly qualified teacher” provisions of No Child Left Behind. The kit explains the law and includes information about loan forgiveness programs, tax credits, and liability protection, and links to helpful Web sites.

To get a free copy of *A Toolkit for Teachers*, download it from www.ed.gov/teachers/nclbguide/index2.html or order by phone (toll-free) at 877-4-ED-PUBS or by e-mail to edpubs@inet.ed.gov.

Also available is an updated version of *Improving Teacher Quality Non-Regulatory*

Guidance, which clarifies many provisions that affect teachers, including the criteria under which a state determines whether teachers of core academic subjects in grades 6, 7, and 8 must meet subject-area competencies. The publication is available online at www.ed.gov/programs/teacherqual/guidance.doc.

School-Business Relationships

When it comes to building meaningful relationships, schools and businesses often don't know how to go beyond team sponsorships or food donations. How can businesses help improve learning opportunities?

According to the Partnership for Kentucky Schools, schools and businesses can connect in many ways. Job shadowing programs and career days offer good starting points. A business might share its leadership training with local superintendents, principals, and teachers. In the summer, a business could hire teachers, both to provide extra income and to help them understand the skills their students need for the work world.

Business and school leaders can collaborate to plan mentoring programs or examine student performance data. Education-minded businesses can implement policies that make it possible for parents to attend school conferences or serve on school boards, even to volunteer in classrooms.

Business organizations might offer training to schools in areas such as financial management, budgeting, communication skills, data processing, and strategic planning.

For more ideas on meaningful business involvement, visit www.pfks.org/involved2.html. The partnership also offers toolkits designed to help schools (a) build and sustain learning communities, (b) create safe and welcoming environments, (c) get students ready for work, and (d) involve students in conducting research toward school improvement. The kits can be downloaded free at www.pfks.org/toolkits/index.html.

Resources of Interest

(continued from page 8)

Space Day 2004

To commemorate the national bicentennial anniversary of the Lewis and Clark Expedition, Space Day 2004 aims to spark the imaginations of 21st-century space explorers, scientists, and inventors. Space Day 2004: Blazing Galactic Trails provides educational programs and activities all year long, culminating in a global celebration May 6, 2004.

Space Day programs include the Space Day Design Challenges, in which students actively collaborate as they create solutions to the challenges of living and working in space; Student Signatures in Space, in which digitized student signatures travel on a space shuttle mission; and Cyber Space Day, the annual Webcast devoted entirely to science, space, and math. To learn how to get students involved, visit www.spaceday.org.



Grant Opportunities

For information on grant programs, funding sources, and technology funding, visit the eSchool News School Funding Center at www.eschoolnews.com/resources/funding.

Consider also watching the Federal Register, published every weekday, at www.access.gpo.gov/su_docs/fedreg/frcont01.html.

Federal Programs

NASA/NSTA: Explorer Schools Program

Purposes: To increase student ability to apply science, mathematics, and technology concepts; increase student knowledge about careers in science, mathematics, and technology; increase participation and professional growth of educators in science, mathematics, and technology; and increase family involvement in student learning.

NASA Explorer Schools or school districts receive grants of up to \$10,000 and become three-year partners in NASA research, discoveries, and missions. The 2004 program will focus on content at grade levels 4 to 9.

Explorer School educator/administrator teams kick off the program at a one-week professional development program at one of the 10 NASA Field Centers during summer 2004. Throughout the three years, teams will refine their action plans, continue professional development, and involve students and families in the program.

Deadline: January 30, 2004

Application and information available online at <http://explorerschools.nasa.gov> or call 703-312-9391.

Foundations

Lowe's Educational Foundation Grants

Purpose: To contribute to addressing issues of importance in communities where Lowe's operates.

The foundation's primary focus areas include education and community improvement projects (examples include projects at parks, housing for the underprivileged, and innovative environmental initiatives).

Deadline: Ongoing

Application and information available online at www.lowes.com/lkn?action=rameSet&url=www.easy2.com/cm/lowe/foundation/intro.asp.

Other

Earthwatch: Education Fellowships

Purpose: To engage more people in sustaining the world's environment, monitoring global change, conserving endangered habitats, exploring the heritage of our peoples, and fostering world health and international cooperation.

Teachers, librarians, administrators, and high school students make up 20% of Earthwatch's 4,000 volunteers each year. A teacher fellow creates one new unit of curriculum as a result of the field experience. A student fellow prepares a report outlining the field experience and is encouraged to share this experience with peers through slide presentations and lectures.

Awards range from partial to full grants toward a project's cost. For projects involving extensive travel, the recipient might be responsible for travel costs.

Deadline: Decisions are made beginning in March and ending when funds are exhausted, typically by late spring.

Application and information available online at www.earthwatch.org/ed/fellowships.html.

Toshiba/NSTA: ExploraVision Awards

Purpose: To challenge all students—from kindergarten to 12th grade—to use their imaginations and the tools of science to propose scientifically feasible technologies that could exist 20 years into the future.

Examples of past creative projects include tires that instantly sprout studs in icy weather, a refrigerator that creates recipes based on its contents, and nanotechnology-based gene therapies that suppress cancerous tumors. Winners get \$5,000 and \$10,000 savings bonds and a trip to Washington, DC; students and teachers on 24 regional winning teams receive digital cameras and laptop computers; and many honorable-mention prizes are awarded.

Deadline: February 3, 2004

Application and information available at www.exploravision.org, or e-mail a request to exploravision@nsta.org.



Hasbro, Smith College, & Sally Ride Science Club: TOYchallenge

Purpose: To provide a fun way for students to learn about science, engineering, and the design process.

Teams of imaginative kids in grades 5 to 8 are invited to create and design a toy or game. Each team can have 3 to 6 members and at least half the members must be girls. Plus, every team must have an adult coach (usually a parent or teacher). To begin, each team must register and select a toy category. There is a \$25 registration fee for each team.

Deadline: January 30, 2004

Information and application available online at www.toychallenge.com, by e-mail to toychallenge@sallyrideclub.com, or from TOYchallenge, 9171 Towne Centre Dr., Suite 550, San Diego, CA 92122.

American Association of University Women: Eleanor Roosevelt Fellowships

Purpose: To provide professional development opportunities for women public school teachers; improve girls' learning opportunities, especially in math, science, and technology; and promote equity and long-term change in classrooms, schools, and school systems. A range of options offers flexible funding opportunities, all with a funding period of July 1, 2004, to August 31, 2005.

The **Professional Development Award** (up to \$5,000) funds K-12 women public school teachers for professional development workshops or conferences, provides seed money to plan a gender-equity school-based program, and covers attendance at the five-day Eleanor Roosevelt Teacher Institute in July.

Project Implementation Awards (up to \$10,000) provide support for a classroom or school program to advance gender equity and cover attendance at the three-day Grantee Meeting at the Eleanor Roosevelt Teacher Institute.

Dissemination Awards (up to \$2,000) support information sharing about model gender-equity projects.

Deadline: January 10, 2004

Application and information available online at www.aauw.org/fga/fellowships_grants/eleanor_roosevelt.cfm.

NEC: Perfect Classroom Competition

Purpose: To encourage middle school science teachers to expand their classroom techniques and resources to foster a love of learning.

This competition acknowledges the creativity of teachers, documents what teachers want in the classroom, and helps to bridge the gap in classroom funding for three classroom teachers. Entries must be submitted in "video essay" format. Cash prizes of \$1,000, \$3,000, and \$5,000 will be awarded.

Deadline: February 9, 2004

Application and information available online at www.sciserv.org/necfoundation.asp or contact Clint Tanner at 202-872-5158 or ctanner@sciserv.org.

Craftsman/NSTA: Young Inventors Awards

Purpose: To challenge students to use creativity and imagination along with science, technology, and mechanical ability to invent or modify a tool.

The program is open to all U.S. students in grades 2 to 8. Students must work independently to conceive and design their tool inventions, then, with guidance from a teacher-advisor, parent, or significant adult, design and build a tool. The tool must perform a practical function, including (but not limited to) tools that mend, make life easier or safer in some way, entertain, or solve an everyday problem.

National winners (one from grades 2 to 5 and one from grades 6 to 8) will receive a \$10,000 U.S. Savings Bond. National finalists (five from each grade category) will each receive a \$5,000 U.S. Savings Bond. Winning teachers and schools also will receive prizes.

Deadline: March 16, 2004

Application and information available online at www.nsta.org/programs/craftsman.

Microsoft: Fresh Start for Donated Computers

This program helps K-12 schools in the United States (public and private) document that donated personal computers are properly licensed—so students and teachers can get access to technology with Windows 98 and/or Windows 2000.

For information and application, visit www.microsoft.com/education/?ID=FreshStart.



Research Notes

(continued from page 5)

dent of individual student poverty. This finding is consistent with other research suggesting that low-income students perform better in low-poverty schools than in high-poverty schools. Because these findings are based on a large-scale study, the researchers suggest educators could use them to help guide strategies for allocating resources in high-poverty schools. The researchers conceptualize three types of school resources:

1. *School organizational capacity* includes the presence of school goals and the use of standards to assess quality, support for teacher professional development, factors associated with a learning organization (e.g., a shared vision, commitment to continuous improvement), Title I services targeted to particular students, and small class size.
2. *Human capital* refers to the education, experience, certification, and skills of principals and teachers.
3. *Social capital* includes efforts to support parent involvement, the extent of parent involvement, characteristics

of students' classroom peers, and the provision of instructional support outside the regular school day.

Implications for Districts and Schools

- **Devote resources to appropriate early assessment and intervention programs.** The achievement gaps observed at the end of third grade strongly suggest the need for early assessment and intervention.
- **Support efforts to raise teaching quality.** The experience and quality of teaching staff emerged as a strong determinant of achievement.
- **Encourage formalization of parent involvement programs.** Formalizing parent involvement through written agreements and other strategies seems to have positive effects.

Researchers Kenneth K. Wong, Stephen J. Meyer, and Francis X. Shen presented *Educational Resources and Achievement Gaps in High Poverty Schools: Findings from the Longitudinal Evaluation of School Change and Performance (LESCP) in Title I Schools* at the 2003 annual meeting of the American Educational Research Association. The paper can be downloaded (free) at <http://peabody.vanderbilt.edu/pcep/Publications.htm#ResearchReports>.

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