

The Link

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*Linking the knowledge from research
with the wisdom from practice
to improve teaching and learning*

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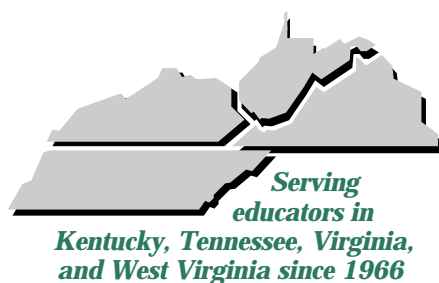
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Equity: A Principle With a Promise

By Nancy Balow, AEL Staff Writer

One of the most principled promises America makes is that of access to a free public education. It's a difficult promise to fulfill when teachers speak English and some students do not, but U.S. law requires school systems to provide access and equity for all students, including those who speak little or no English (*Lau v. Nichols*, 1974).

If you grew up in this country, you've likely heard America described as a "melting pot." Depending on where in America you lived, however, you may have been either confused by the description or surrounded by evidence of its truth.

In urban areas with a history of immigration, school districts tend to have a good understanding of legal requirements and knowledge of immigrant students' needs. Rural areas, which only recently began to attract foreign-born immigrants, may not be as well prepared to deal with their new populations. Helping schools to meet the needs of limited English proficient students is one goal of the Region IV Comprehensive Center at AEL.

EQUITY IN EDUCATION

Equity Means Helping All Students Succeed

"If students have little or no understanding of English, they won't be served by simply handing them a textbook and saying 'Here you go,'" explains staff member Marvin Rodriguez. "There are systems and methods that can be built in, from the state level down to the classroom, to help students, their families, and the schools succeed. In the past, many rural districts in our region had no reason to give priority or funding to such programs. Now that the immigrant and migrant populations in rural areas are expanding, we're staying very busy helping the schools learn how to serve them better." (See box on page 3 for population figures.)

Rodriguez knows firsthand what it's like to attend school as a foreign language speaker. "My parents moved to New York City from Puerto Rico before I was born, but they never became comfortable with English. In our neighborhood the *bodegas* [grocery stores] were, and still are, the social arena—pockets of discourse where folks could get their news from one another and not need English to get along. My first language was Spanish—I learned English at school, back in the 'sink or swim' days before the law required special services. There were certainly plenty of frustrations for me when I started school."

LEP . . . ESL . . . ELL

This alphabet soup of acronyms describes students who have little or no mastery of the English language. LEP stands for limited English proficient, ESL refers to English as a second language, and ELLs are English language learners.

What Schools Can Do

Rodriguez suggests instructional and assessment practices to help schools support youngsters from families where English is seldom spoken at home. "School districts should have someone who coordinates and delivers services,

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EQUITY IN EDUCATION

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I believe that 10 years ago we had one ESL teacher who covered the whole 21-school district. Each year we'd see a few more schools with immigrant students, and each year a few more students in each school. Today we have a dozen teachers and tutors.

—Peggy Olney

generally an English as a Second Language director or teaching specialist. Every school with limited English proficient students should set aside time for students to work with the specialist. Elementary schools generally have more time designated for language instruction, while high schools may have only an hour a week. To supplement what the specialist does, classroom teachers can use a buddy system—find a student who understands both languages to act as a translator and mentor.”

Many teaching techniques for working with limited English proficient students are also used in special education: designing shorter assignments, extending completion times, and using pictures or three-dimensional models to convey words and concepts. Instructional strategies that work for all students while boosting language skills for limited English speakers can make a big difference for teachers who don't have time to

AEL's Comp Center has helped with so many things besides what's happening in the classrooms. We needed help with the logistics, such as how to think about staffing and how much time to spend with the kids.

—Peggy Olney

Resources for Classroom Teachers

The *Help! They Don't Speak English Starter Kit*—a new publication from the Region IV Comprehensive Center at AEL in cooperation with the Eastern Stream Center on Resources and Training and the Center for Applied Linguistics at the Region XIV Comprehensive Center—helps busy primary teachers who want practical advice on how to more effectively include, instruct, and nurture limited English proficient students.

The *Help! Kit* presents teaching strategies and materials that benefit all students (particularly LEP students), provides cultural information to help teachers better appreciate language-minority students and their families, introduces strategies to improve the reading and writing abilities of LEP students, introduces math exercises and strategies that combine learning basic math skills with language development activities, and proposes alternative methods to monitor the progress of and evaluate LEP students.

This new edition was prepared from one produced in 1989 by a task force of Virginia migrant educators in response to requests from classroom teachers.

The 206-page book is free from the Eastern Stream Center on Resources and Training, Bugbee Hall, Room 305, Oneonta, NY 13820, phone 800-451-8058.

The Center for Research on Education, Diversity & Excellence at the University of California provides useful research and materials to educators. A recent research brief, *Teaching Language Minority Students in Elementary Schools* (December 1998), explains how to plan, deliver, and assess a content-based lesson that embeds language development objectives. Go to the Center's Web site (<http://www.crede.uscs.edu>) to download this and other information, or write to CREDE, University of California, College Eight #201, 1156 High Street, Santa Cruz, CA 95064.

I think every one of our teachers has taken something Marvin suggested and made it a part of their classroom teaching.

The strategies have been very beneficial.

—Peggy Olney

prepare separate lessons for groups of students.

Some strategies include total physical response activities, which can range from acting out important classroom behaviors—such as fire drills—to reciting and acting out rhymes as simple as “teddy bear, teddy bear, turn around; teddy bear, teddy bear, touch the ground.” Other strategies might be cooperative learning, language experience, dialogue journals, and games. These and more are presented in a recent AEL publication for primary teachers, *Help! They Don't Speak English* (see box above).

As the book points out, limited English proficient students are not limited *thinking* proficient; in time they will become comfortable enough to participate more in class. Meanwhile, working with them and their families to improve literacy will help them adapt more quickly.

The Price of Breaking the Promise

What happens when schools don't treat limited English proficient students equitably? The cost to students

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in lost opportunities can be high; many students who don't receive the proper support simply never graduate from high school. Their talents and abilities, unrecognized and undeveloped, can be lost to society. Their lack of education may consign them to the bottom of the socioeconomic heap.

The costs to schools can be daunting, as well: Families or advocacy groups may sue a school or district that doesn't adhere to federal guidelines. If federal intervention is necessary, Rodriguez points out, it can be

“very costly, time consuming, and anxiety producing” for the school.

AEL's Comprehensive Center can help state and district administrators fulfill their responsibilities. Meeting state and federal guidelines can help a school avoid big problems and, more important, provide a high-quality education to all students.

Marvin Rodriguez taught for many years before joining AEL. Most recently, he was an ESL teacher in Virginia's Fairfax County. Peggy Olney is ESL Director for Moore County Schools, a district in rural, central North Carolina. ■

The Region IV Comprehensive Center at AEL helps schools realize the goal of the 1994 Improving America's Schools Act—that all children achieve to high standards, particularly those students with special needs. The Center serves Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Visit the Center's Web pages (<http://www.ael.org/cac>) for more information about its services. The Center recommends the following on-line resources for multicultural, equity, and diversity issues.

Northwest Center for Equity and Diversity, located at Edmonds Community College, is a regional resource center promoting gender equity and cultural diversity in education, business, and the community.

<http://www.edcc.ctc.edu/nwcenter>

Equity Education Online, lists equity resources (organizations, research, tools, materials, reform efforts) on the site of the Washington MESA project, at the University of Washington.

<http://www.etc.wednet.edu/equity/default.html>

Escotet International Link/One World, (with side-by-side English/Spanish menus) includes more than 5,000 links to news sources, as well as education, the arts, international studies, libraries, and more.

<http://www.fiu.edu/~escotet>

ERIC Clearinghouse on Rural Education and Small Schools, delivers information about American Indian and Alaska Natives, Mexican Americans, migrant education, rural education, and small schools.

<http://www.ael.org/eric>

National Clearinghouse for Bilingual Education, George Washington University, includes technical assistance information, databases, an on-line library, success stories, and more.

<http://www.ncbe.gwu.edu>

Just recently we began to see languages besides Spanish, like Chinese [in our rural district]. We're looking at a whole new challenge of reaching out to students and families. Now, at least, we know more about how to do it.

—Peggy Olney

Migrant and Limited English Proficient Students

Region IV Comprehensive Center

Numbers reflect K-12 public school enrollment only.

Kentucky

LEP	1989-90	1,334	1996-97	3,194
Migrant	1993-94	17,262	1996-97	22,762

North Carolina

LEP	1989-90	4,586	1996-97	24,771
Migrant	1993-94	10,103	1996-97	11,710

South Carolina

LEP	1989-90	n/a	1996-97	3,202
Migrant	1993-94	2,227	1996-97	1,822

Tennessee

LEP	1989-90	2,829	1996-97	7,223
Migrant	1993-94	391	1996-97	815

Virginia

LEP	1989-90	n/a	1997-98	24,876*
Migrant	1993-94	1,835	1996-97	1,662

West Virginia

LEP	1989-90	273	1996-97	3,000**(approx.)
Migrant	1993-94	256	1996-97	208

These figures come from annual surveys filed by state education agencies that receive Title VII funds. Because some state figures were not included for 1996-97, other sources were consulted. Figures designated by an asterisk (*) come from a 1998 report prepared by the National Clearinghouse for Bilingual Education; those designated by two asterisks (**) come from a report prepared by the Center for Equal Opportunity.

LINKING RESOURCES AND GOALS

Taking the Mystery Out of Local Consolidated Planning

By Diana Bowman, Former Training & Development Specialist at AEL's Comprehensive Center

Why It's Needed

Since the 1994 reauthorization of the Elementary and Secondary Education Act through the Improving America's Schools Act, school improvement and student achievement literature abounds with themes related to a comprehensive and coordinated approach to education: "all children achieving to high standards," "programs that cut across categorical boundaries," "educating the whole child," and "systemic school improvement." Individual strategies for improving the quality of education programs are giving way to school-wide reforms designed to improve every aspect of a school's culture.

At the same time, schools are dealing with significant budget cuts, reductions in numbers of administrators and support staff, and reallocation of funds. With increased emphasis on comprehensive reform and the reality of limited resources, meaningful change can occur only if all available resources are focused efficiently to enable all programs to contribute to the achievement of common goals.

Consolidated planning is a way to integrate programs so that resources are maximized and program fragmentation and duplication are minimized. By examining all programs and resources in light of school, district, or state needs and goals, programs can be designed to support initiatives that address these needs and goals in a coordinated fashion.

How It Works at the Local Level

After a comprehensive needs assessment in the Bridgewater school district*, a planning team identified as a priority strengthening its elementary math program. Contributing causes to the students' low performance in math included a kindergarten through second grade math program that was not rigorous or aligned to the higher grades' curriculum. Also, a recent switch in grades three through six—from departmentalized teaching to self-contained teaching—resulted in many teachers being asked to teach math, reading, and science for the first time in a number of years.

The planning team researched strategies and programs that would strengthen the district's math program by focusing on developing and enhancing the teachers' skills. Team members looked into a program called Math All-Stars, a comprehensive approach to improving math. This program would provide ongoing professional development to help teachers implement hands-on, inquiry-based instruction and align their instructional strategies and curriculum across grades kindergarten through six. This program had been implemented in similar districts across the nation and reported good results. When teachers were informed about the program and surveyed for their input, most agreed that they would like to see it implemented at their schools.

* composite (fictitious)

The planning team contacted the program developers and negotiated fees for their services over the next three years. Needless to say, the program was costly. The team began to examine the costs in relation to the district's financial resources. The team identified the following resources that, if combined, would help fund the program: a portion of Title I funds, Title II professional development funds, Title VI funds for innovative strategies, a portion of the district allocation for professional development, and a state department of education allocation for math and science materials. By targeting these funds toward a major need, the district was able to support the implementation of Math All-Stars.

The Choices Involved

Consolidated planning can involve tough choices. When a district decides to target resources to an area of greatest need, programs in other areas will frequently need to be funded by other resources or, perhaps, cut. Because the Bridgewater district's consolidated plan focused professional development funds on math improvement, schools had to find alternative resources for professional development they wanted in multiple intelligences and discipline. Also, because math was identified as a priority area, the greater portion of the state department's allocation for math and science materials was committed to materials for Math All-Stars.

The planning team had involved district and school staff in the needs assessment and identification of priority needs. When the time came for supporting these tough choices, the teachers understood the benefits of focusing resources and were willing to sacrifice to adopt the math program.

Consolidated planning is not easy. It entails a thorough and thoughtful process that involves all stakeholders and coordinates programs and resources to address identified needs. Although funds from selected programs may be targeted toward a common goal, these funds still must be tracked to ensure that they are spent according to the intent of their programs.

In addition, coordinated services are designated to improve the learning of all students. However, students with special needs must be provided appropriate support to reach high standards.

How AEL Can Help

The Region IV Comprehensive Center at AEL has developed a series of training modules for planning teams: *Making Resources Matter: A Systematic Approach to Developing the Local Consolidated Plan*. Ten modules—which include clear explanations and work sheets—are designed to guide teams throughout the planning process. The modules explain what consolidated planning is and is not and address such topics as establishing the team, creating a district vision and mis-

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sion, conducting a needs assessment, identifying and selecting research-based programs and strategies, planning professional development, linking the pieces of a consolidated plan, budgeting, implementing the plan, and charting progress and revising the plan.

The modules will be available from the Center in the summer of 1999. For further information on *Making Resources Matter* or assistance with consolidated planning, call AEL at 800-624-9120.

The Region IV Comprehensive Center at AEL is one of 15 centers across the nation. Authorized by the 1994 Elementary and Secondary Education Act, these centers help states, school districts, and schools integrate their federal resources to improve teaching and learning for all students, including those with special needs. The centers' two priorities are assisting Title I schoolwide programs and helping local education agencies (and schools funded by the Bureau of Indian Affairs) that have the highest percentages or numbers of children in poverty. ■

Needs Assessment: A Vital Part of the Planning Process

Many of us are good at breaking tasks and information down into smaller pieces—an approach that helped Henry Ford mass produce automobiles at the turn of the century. But we may be less experienced at looking at small bits of information and putting them back together to form a coherent, holistic picture. A *needs assessment* can help schools and districts examine data (bits of information) in a way that helps them get a “big picture” of strengths and weaknesses, determine root causes of the identified problems, make connections, and establish priorities.

Need: The discrepancy between what is and what should be. **Needs Assessment:** The systematic process of gathering information necessary to identify needs of specific groups of people.

Conducting a comprehensive needs assessment is the most crucial step in the process for those planning to consolidate programs and resources. Data gathered from a variety of sources provide information relevant to student achievement. Accumulated data can help define a situation, show how prevalent it is, and show how it has changed over time. This information creates a comprehensive view of a school or district rather than just a snapshot.

Planning teams should examine several categories of data (i.e., student attendance, grades and test scores, and behavior; faculty experience, training, and characteristics; demographics; instructional materials and programs; student and faculty handbooks; and budgeting). Once the data are organized and represented in understandable ways, the planning team can identify discrepancies between the current status and desired levels of achievement.

An important but frequently overlooked step is for team members to make “best guesses” (based on data and fact) about the possible reasons for discrepancies between where the district should be and where it is. As team members explore root causes for low-performing areas, they are likely to identify similarities between possible reasons for low performance. Common or similar reasons, grouped together, form a priority.

Many factors contribute to low student achievement. Conducting a needs assessment permits a planning team to identify these factors and select programs and strategies that target the real problems.

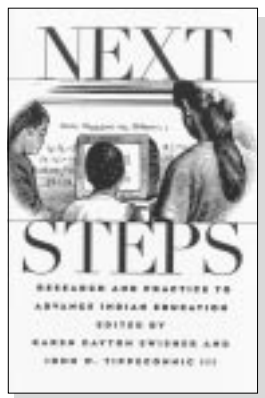
Below is an example of one piece of the needs assessment process from *Making Resources Matter: A Systematic Approach to Developing the Local Consolidated Plan*.

Identifying Strengths, Needs, Root Causes, and Connections—Sample Worksheet

Data Needed or Collected	Where We Should Be	Where We Are	Discrepancy	Possible Reason(s) for Discrepancy
Math test scores for grades 3-6	100% of students working at or above grade level	57% testing at or above grade level	43% of grade 3-6 students testing below grade level in math	<ul style="list-style-type: none"> Math taught late in the day Math skills of students entering 3rd grade are low Switch from departmentalized to self-contained teaching in the elementary schools New test (scores were low throughout the state) New math textbooks do not align with state assessment Math classes focus on computation; often students are not engaged

NEW AEL PRODUCTS

From the ERIC Clearinghouse on Rural Education and Small Schools



Next Steps in American Indian Education

What is “Indian education” today? How will it look in the future? Editors Karen Gayton Swisher and John W. Tippeconnic III asked these questions of a dozen indigenous scholars and practitioners working in American Indian and Alaska Native education. The essays they received became *Next Steps: Research and Practice to Advance Indian Education*.

This book helps readers explore two important themes. The first theme is education for tribal self-determination. Tribes are now in a position to exercise full control of education on their lands. They have the authority to establish and enforce policies that define the nature of education for their constituents, just as states do for their school districts. The second theme is the need to turn away from discredited deficit theories of education to an approach that builds on the strengths of Native languages and culture and the

basic resilience of indigenous peoples. This second theme could be especially important for the 90% of Indian students who attend public schools.

Karen Gayton Swisher, Ph.D. is dean of instruction at Haskell Indian Nations University. John W. Tippeconnic, III is a professor of education at The Pennsylvania State University, where he directs the American Indian Leadership Program.

317 pp., 1999, soft cover, ISBN 1-880785-21-8, \$24

Free ERIC Digests

Digests are two-page (1,500-word) summaries of the education literature on a specific topic, including a reference list of 10 or more sources for additional in-depth information. Digests are brief, informative, and easy to read.

- *Assessing LEP Migrant Students for Special Education Services*. J.R. Lozano-Rodriguez & J. Castellano (1999), EDO-RC-98-10
- *Responding to Undocumented Children in the Schools*. S. C. Morse & F. S. Ludovina (1999), EDO-RC-99-1

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AEL Makes Video Appearances

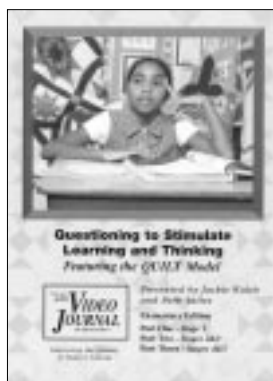
Video Journal Introduces QUILT Program

John and Blanch Linton don't fit the filmmaker stereotype. The self-effacing, soft-spoken husband and wife look like grandparents getting ready to coast quietly into retirement.

When the lights and cameras come on, though, the two are as professional as any big name in Hollywood.

The Lintons are the creators, owners, and producers of *The LPD Video Journal of Education*, now in its eighth year. Last June, in response to subscriber requests for information about classroom questioning, the Lintons arranged to tape AEL's national QUILT training-for-trainers event in Lexington, Kentucky. They and two crew members spent three days learning about and taping the processes that make up Questioning and Understanding to Improve Learning and Thinking (QUILT).

After getting the theory and training on tape, the Lintons visited elementary, middle, and high schools that practice QUILT. They taped classroom sessions that demonstrate QUILT techniques and interviewed some of the teachers. Volume 8, Issue 4, titled *Questioning to Stimulate Learning and*



Thinking, is in subscribers' hands and available for individual purchase.

As Blanch explained, “Once we got into the writing and editing, we realized that we needed to present the QUILT model rather thoroughly. It became clear that we couldn't do it justice in the 70 minutes we'd planned. When we decided to use three tapes rather than two, we had room to include in-depth teacher interviews that make a very powerful presentation.”

“We had funny quirks along the way,” she continued. “The first writer we assigned sold a script to Hollywood and left in the middle of the job. The duplication company changed hands just as we were sending the QUILT issue, so it was delayed in that transition. But I think sometimes those little challenges lead to doing your best work, and we feel this is one of the best things we've done. Beth and Jackie [Sattes and Walsh, co-creators and trainers] are so good that they motivated all our people to do their best. For example, our editor got really excited about the model and spent a lot of time creating some wonderful quilt graphics.”

Linton concludes, “This was a wonderful project to work on, and we all learned a lot from it. We cross paths with a

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From ERIC

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- *Schools, Principals, and Teachers Serving American Indian and Alaska Native Students*. D. M. Pavel (1999), EDO-RC-98-9
- *Outdoor Education and the Development of Civic Responsibility*. J. A. Boss (1999), EDO-RC-98-5
- *The Foxfire Approach to Teaching and Learning: John Dewey, Experiential Learning, and the Core Practices*. B. A. Starnes (1999), EDO-RC-98-6
- *Charter Schools: An Approach for Rural Education?* T. Collins (1999), EDO-RC-98-3
- *Homeless Children: Addressing the Challenge in Rural Schools*. Y. M. Vissing (1999), EDO-RC-98-1
- *A Practical Look at Comprehensive School Reform for Rural Schools*. T. Sherwood (1999), EDO-RC-98-2
- *Rural African Americans and Education: The Legacy of the Brown Decision*. P. S. Kusimo (1999), EDO-RC-98-4
- *Sociodemographic Changes: Promise and Problems for Rural Education*. G. G. Huang (1999), EDO-RC-98-7
- *Current Literature on Small Schools*. M. A. Raywid (1999), EDO-RC-98-8

To order ERIC publications, contact: ERIC/CRESS, P.O. Box 1348, Charleston, WV 25325-1348; telephone 800-624-9120; e-mail: ericrc@ael.org ■

Video Journal

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lot of educators and have shared QUILT with them. There's interest out there. With the concern for raising student achievement, we're all realizing that we've got to do what we do in the classroom much better. This uses a research base to get people excited about making questioning more scientific."

There are two editions of the QUILT Video Journal, an elementary (#804E) and a secondary (#804S). Each costs \$395, or get both for \$595. Each provides an introduction to QUILT through three videotapes, an audiotape of the soundtrack, and a guidebook that suggests before- and after-viewing activities and discussion questions. To order, contact The LPD Video Journal of Education by phone at 800-572-1153 or on the Web at <http://www.videojournal.com>. For information about QUILT training, contact Beth Sattes at AEL. Phone 800-624-9120, e-mail sattesb@ael.org, or visit our Web site at <http://www.ael.org/rel/quilt>.

Documentary Describes AEL Project in Southern West Virginia

What would happen if a whole community believed its daughters should learn as much as possible about mathematics and science? What if this belief extended even to girls from the humblest corner of a rural county that had experienced long-term poverty? Would it make a difference? With funding from the National Science Foundation, AEL staff members Patricia Kusimo, Carolyn Carter, and Marian Keyes devoted three years (1995 to 1998) of intensive research and development work to addressing these questions.

The "Voices of Girls in Science, Mathematics, and Technology" project explored ways communities, families, and schools can support girls' achievement in math and science through mentoring, advocacy, and challenging hands-on learning experiences. The project showed that all girls, regardless of circumstances, can learn these subjects when there are high expectations and sufficient support. It also showed the impact families can have on raising expectations among school personnel and strengthening the curriculum, when families understand *why* it is important and *how* to advocate for their children. Everyone in this effort won big: the girls, the community, and the schools.

From the beginning, documentary filmmakers John Nakashima and Charles "Chip" Hitchcock followed the girls in the rural site. They accompanied AEL staff and the girls to meetings and workshops in the schools and in the community, interviewing girls, families, and school officials and recording hundreds of hours of video. Nakashima and Hitchcock, who also work at WNPB-TV (Morgantown, WV) have now created a one-hour documentary. It is inspiring and full of hope about what can happen when people get together to support achievement at the community level.

On Friday, May 21, at 1 p.m., all three West Virginia Public Television stations will broadcast *Voices of Girls*. Check TV listings for local channel information. AEL and the ERIC Clearinghouse on Rural Education and Small Schools will distribute videotapes of the documentary beginning in late May. For more information, contact Robert Hagerman or Pat Hammer (800-624-9120; e-mail hammerp@ael.org). ■



Carolyn Carter

During the 1995-96 school year, Voices girls participated in Saturday workshops. Here, Christy Knuckles, Tessa Lane, and Keesha Thompson work on their quilting projects as they learn geometry in a real-world context.

PUBLICATIONS OF INTEREST

From the Eisenhower National Clearinghouse

The Eisenhower National Clearinghouse for Mathematics and Science Education is a repository of current mathematics and science resources available to educators, students, parents, and others. For more information, visit the ENC Web site at <http://www.enc.org>. The Eisenhower Regional Consortium for Mathematics and Science Education at AEL is part of ENC's national network to improve math and science education. The Consortium provides technical assistance and professional development on topics important to the region. For more information, visit our Web site at <http://www.ael.org>.

Strategies for Science Professional Development

The Eisenhower National Clearinghouse has just published *Ideas that Work: Science Professional Development*. This free publication highlights 15 strategies for effective professional development for science teachers. The descriptions of each strategy cover the elements necessary for program design and implementation as well as special issues for educators to consider. Each strategy is illustrated with examples of existing programs. Additional programs are featured and contact information for all programs is provided.

Ideas that Work: Science Professional Development was produced in cooperation with Susan Loucks-Horsley, one of the authors of *Designing Professional Development for Teachers of Science and Mathematics*, published by Corwin Press. Last year, ENC published *Ideas that Work: Mathematics Professional Development*, which covers the same strategies and features professional development programs specifically for mathematics teachers.

To request copies of this publication, contact the Eisenhower National Clearinghouse at 1929 Kenny Road, Columbus, OH 43210, phone 800-621-5785, or e-mail editor@enc.org.

Mathematics Professional Development

The Clearinghouse's first professional development package, *Teacher Change: Improving K-12 Mathematics*, is a collection of resources to help educators and professional development providers facilitate discussion and reflection on improving K-12 mathematics. The materials include

- a set of professional development activities created by ENC and the Midwest Consortium for Mathematics and Science Education at NCREL that includes facilitator notes, PowerPoint presentations, and all handouts
- an overview of teacher change written by international authorities Michael Fullan and Andy Hargreaves
- data and information from the Third International Mathematics and Science Study (TIMSS), including all released TIMSS test items
- a variety of teacher narratives and case studies for discussion

A corresponding CD-ROM and limited supply of notebooks is scheduled for publication by May 16.

A Magazine for Classroom Innovators

ENC is launching a new print and on-line publication, *ENC Focus: A Magazine for Classroom Innovators*. While the primary audience is K-12 classroom teachers, the publication contains information of interest to school administrators and policymakers, teacher educators, parents, community members, and all those concerned about education improvement.

The theme of the inaugural issue is Innovative Curriculum Materials, and the magazine also contains descriptions of innovative K-12 mathematics and science materials from the ENC's vast collection. Other features include essays, classroom stories, and regular columns on such topics as using the Internet in the classroom and applying for grants. The theme of the second issue of the magazine will be Inquiry and Problem Solving.

The on-line version of the magazine will soon be available on the ENC Web site (<http://www.enc.org>). Subscriptions to the print version are free on request.

For more information, contact Annette Thorson by phone at 614-292-3728 or by e-mail (athorson@enc.org). Publication of the first issue was scheduled for April 16.

Other Publications Available

To request copies of the following publications, contact Tracy Crow at ENC by phone at 614-292-9249 or by e-mail (tcrow@enc.org).

- *Ideas that Work: Mathematics Professional Development*
- *ENC Focus: Integrating Math and Science* (limited quantities)
- *ENC Focus: Laserdiscs and CD-ROMs for Science* (limited quantities)
- *ENC Focus: Multicultural Approaches in Math and Science*
- *ENC Focus: Informal Math and Science Education*
- *ENC Focus: Family Involvement in Education*
- ENC Posters (Boxes of flat posters and boxes of posters in mailing envelopes)
- *ENC Update*, the final issue (a descriptive brochure)
- *Guidebook of Federal Resources for K-12 Mathematics and Science (1998-1999)*

ANNOUNCEMENTS AND INFORMATION

AEL has planned several summer activities for educators; we hope to see you at one. Visit the Training and Conferences page of our Web site (<http://www.ael.org/training.htm>) for more information.

Effective Questioning to Increase Student Achievement: QUILT Training for Trainers

June 20-25, Lexington, KY

Designed to increase student learning by improving teachers' classroom questioning techniques, QUILT—Questioning and Understanding to Improve Learning and Thinking—complements and supports many staff development and school reform programs.

This training of trainers helps districts prepare cadres of teachers who can train others. Typically, a local school team (two teachers and an administrator) attends the training. QUILT has been successfully implemented in elementary, middle, and high schools.

Registration costs \$675 per person. *Special for Kentucky schools:* The Kentucky Department of Education has grants available to help nine schools send teams to 1999 QUILT training. For more information, visit our Web site or contact Sandra Orletsky or Beth Sattes by e-mail (orletsk@ael.org, sattesb@ael.org) or phone 800-624-9120.

Interdisciplinary Teamed Instruction: 1999 Summer Institutes

June 21-25, Salt Lake City, UT

July 12-16, Lexington, KY

This reform strategy builds collaboration and promotes integration across the school curriculum. It enables teacher teams, students, administrators, and community members to weave standards, curriculum, instruction, and assessment into a relevant, rich tapestry of learning experiences.

Each team leaves the weeklong institute with

- a plan for implementing interdisciplinary teamed instruction
- a team-developed integrated unit
- specific instructional practices such as project-based learning and community-based learning
- strategies for developing alternative assessments and performance criteria and scoring rubrics
- resources for effective teamwork, community-building, and networking

Registration fee of \$450 per person will be accepted until June 1. Teams of six or more receive a 10% discount. *Special to Kentucky educators:* The Kentucky Department of Education has scholarships available for the Lexington institute.

Visit our Web site for more details, or contact Rebecca Burns by e-mail (burnsr@ael.org) or phone 800-624-9120.

Curriculum Showcase on Standards-Based Mathematics and Science Programs

July 25-27, Washington, DC

This conference, sponsored by the Eisenhower Regional Consortia at AEL and Research for Better Schools, will showcase the new National Science Foundation (NSF) K-12 Curriculum Development Projects for mathematics and science. The projects are aligned with the National Council of Teachers of Mathematics Standards and the National Science Education Standards.

Direct, hands-on workshop experience with each project will be offered, as well as information and discussion that will facilitate implementation at the school level.

The Sunday evening through Tuesday afternoon conference is open to teams of educators from each of the states in the Mid-Atlantic and AEL regions.

If you're considering adopting new mathematics and/or science materials, send a team of educators to the conference. For a limited number of teams of three or more, conference sponsors will pay the two-night lodging costs for one participant. Contact Susan Taylor (taylor@ael.org) or Bill Geppert (geppert@rbs.org) about the offer.

Registration costs \$80 per person through June 1, and \$100 thereafter. The fee includes materials, two lunches, and breaks, as well as summaries of each NSF project. Participants are responsible for travel and accommodations. To register, visit our Web site or contact Carol Crociante, 215-574-9300, ext. 280; e-mail: crociante@rbs.org.

Inquiry Into Improvement: Quest for SMART Learners

July 26-27, Gatlinburg TN

SMART stands for successful, motivated, autonomous, responsible, and thoughtful—all characteristics that can apply to teachers, administrators, and parents as well as students. All are invited to this symposium on active learning, motivation, learning with technology, brain-based learning, and more. Presentations will include some specifically for parents, which will address such topics as assessment for beginners and standards for parent involvement.

A highlight of the symposium will be Jody Westbrook's daylong workshop on motivation. Participants will consider how to create an environment that encourages self-motivation through reading and analyzing case examples, assessing their own individual styles, and discussing with others. Westbrook is a consultant with the Center for Creative Leadership.

For more information, visit our Web site or contact Beth Sattes or Shirley Keene by phone at 800-624-9120 or e-mail (keenes@ael.org).

Technology in the Schools: Can We Make It Work?

By Robert L. Bangert-Drowns and Curtis Pyke, Center on English Learning & Achievement

America is investing enormous sums of money to bring the information revolution to its schools. Unfortunately, there is no commensurate investment in pedagogical reform to match the investment in electronics. In fact, little is known about effective strategies for integrating technology into education. With no clear vision of effective technology use, teachers may resort to simple “exposure” episodes, allowing students access to software with little curricular support.

We advocate a twofold vision of effective learning with technology. First, we think it valuable to conceive of software and video as electronic text, and interactions with electronic text as a kind of literate act. As with paper-based text, reader-viewers can derive personal meanings from electronic text by employing rhetorical and experiential knowledge and evaluative reasoning to the information organized there. Second, we think it valuable to conceive of effective interactions with software as instances of cognitive engagement—the mobilization of cognitive, affective, and volitional resources to explore and interpret one’s experience.

Can we characterize student engagement with electronic text? From research on what it takes to become highly literate, we developed the term “literate thinking” to define our highest expectations for students at work with educational technology. By literate thinking we mean the capacity to recognize the importance of their own perspectives in deriving meaning from what they observe or experience and the capacity to consider alternative perspectives and interpretations of those phenomena. We set out to look for instances of students engaged in literate thinking with electronic literature.

We chose an urban elementary magnet school as a suitable site for observing a diverse population of students at work with educational software. We were quickly faced with a paradox: We found it very difficult to find any students clearly engaging in literate thinking, yet we found almost all of the students engaged in some way. From our observations we identified seven patterns of engagement and arranged them according to the degree that they approximated literate thinking. By doing so, we created a taxonomy of seven modes of engagement that we have since found extremely useful in understanding students’ work with electronic text—and it may be useful in understanding engagement in other tasks as well.

Brief descriptions of the seven modes of engagement and their ordered arrangement can be found in the accompanying table. We believe that most students encounter unfamiliar software in either a structure-dependent way (if they have seen similar software) or an unsystematic or frustrated way (if they have less knowledge regarding software operation). If the early experiences with the software are negative (that is, uninteresting or unsuccessful), students will tend toward disengagement. However, as students become increasingly familiar with software operation and navigation and increasingly involved with the software content, their engagement tends toward literate thinking.

Ascending the taxonomy, the focus of students’ attention shifts from mastering software operation and navigation to mastering software content and ultimately to gaining new insight about themselves. “Ownership” of knowledge becomes increasingly personal, and the student is increasingly capable of self-directed learning and problem solving. Students move from avoidance and distraction in learning to an awareness of higher learning standards and finally to personal expectations for success with learning.

To date we have observed more than a hundred elementary school students at work with software. Invariably, the taxonomy of modes of engagement has proved a useful way of characterizing shifts in the students’ interaction styles. Not only does the taxonomy provide teachers with a vision of how effective student-computer interactions look, it equally identifies potentially problematic styles of engagement (disengagement, unsystematic engagement, and frustrated engagement). Hopefully, it also will allow us to identify factors that enhance or diminish engagement. Having a clearer sense of what students are doing with software allows us to explore combinations of software, student, and curricular features for stimulating and supporting higher modes of engagement. Ultimately, we hope to articulate sets of pedagogical strategies that might best derive dividends from the nation’s investment in educational technology.

Reprinted courtesy of CELA, this story originally appeared in the Winter 1999 issue of English Update. Related research was published in the Fall 1998 issue under the title “Reading” the World Wide Web and can be found on the center’s Web site at <http://cela.albany.edu>. ■

How do students engage with educational software?

A taxonomy of modes of student engagement with educational software

Literate thinking	<i>Student understands the content of the software from multiple and personally meaningful perspectives.</i>	Student manipulates software features to explore different perspectives and develop different interpretations as an opportunity to reflect on personal values or experiences.
Critical engagement	<i>Student attempts to identify operational and content-related limitations of the software.</i>	Student manipulates software features, keenly observes the effects of the manipulations, and integrates the results in future interactions to test personal understandings or limitations of the software presentations. Software structure becomes an object of critical reflection and a stimulus for perspective-taking.
Self-regulated interest	<i>Student creates personal goals within the software to make the software as personally interesting as possible.</i>	Student adjusts software features to sustain deeply involved, interesting, or challenging interactions. Student creatively uses software for personally defined purposes.
Structure-dependent engagement	<i>Student is sensitive to and competent with software operation and navigation.</i>	Student pursues goals communicated by the software. Student may not yet display full mastery of software features, but responds to operational, navigational, or content organization. Students demonstrate patterns of interaction that make competent use of software structure.
Frustrated engagement	<i>Student possesses clear goals when working with the software but is unsuccessful in accomplishing them.</i>	Student tries to interact effectively with the software, but is unsuccessful. Student knows what the software can do, but cannot accomplish it. Student may manifest stress or frustration in negative comments, confusion, aggression, erratic behavior, agitation, distress, or anxiety. Students are aware of the goal structure of the software.
Unsystematic engagement	<i>Student has unclear goals when working with the software.</i>	Student moves from one incomplete activity to another without apparent reason. Student successfully completes simple tasks within the software but does not link tasks for higher-order goals. Students remain engaged with software.
Disengagement	<i>Student avoids working with the software or discontinues use prematurely.</i>	Student resists or stops interacting with the software. Student may sit and tinker with the software in a seemingly purposeless or disinterested way with little or no response to feedback from the computer. Or, student may in fact turn away from the software or resist using it at all.

Milken Exchange Looks at Technology in West Virginia Schools

Few would question the value of technology in the workplace, but little research of statewide implementation has been done on its value in education. As administrators and policymakers wrestle with decisions about where to spend education dollars, they want to look at something concrete.

Its interest in the role of education technology in improving public schools led the Milken Exchange on Education Technology, an arm of the Milken Family Foundation, to fund a study of West Virginia's Basic Skills/Computer Education program. *West Virginia Story: Achievement gains from a statewide comprehensive instructional technology program* was released in March.

West Virginia has made an unusual commitment to education technology over the past decade. Every year since 1990-91, beginning with kindergarten, the state has provided every public elementary school with enough equipment to put three or four computers, a printer, and a networked file server into each classroom at the grade-level targeted that year. In addition, software and professional development for teachers have been provided as implementation has moved up the grades. Cost per year has been around \$7 million.

The Milken study, conducted under the leadership of Dale Mann and Charol Shakeshaft of Interactive, Inc., sug-

gests that West Virginia's program has contributed to gains in test scores. According to the study, analysis of data shows that 11% of the gain in fifth-graders' scores from 1997 to 1998 can be attributed to the technology program.

"I expect we'll see this study discussed and cited frequently in coming months and years," says Merrill Meehan, senior evaluator at AEL. "It is one of so few research efforts in this area that covers such a time span that it's bound to be seen as important. I would join with Cheryl Lemke, executive director of the Milken Exchange, in urging educators and policymakers to—as with any evaluation of a specific program—interpret the findings cautiously. If your goal is to improve basic skills test scores, and if you can leverage the resources to implement a program as comprehensive as West Virginia's, this study has something to say to you.

"It's rich with ideas for potential studies that could also be very valuable. For instance, back in 1990, West Virginia teachers were—like teachers in many places—very uncertain about bringing computers into the classroom. The Milken study only touched on that question, but does suggest that teacher attitudes toward and confidence with technology have become overwhelmingly positive. How that was accomplished and the implications it has for students should be captured."

For a copy of West Virginia Story, contact the Milken Exchange on Education Technology, 1250 Fourth Street, Fourth Floor, Santa Monica CA 90401. The report is available on the Web at <http://www.milkenexchange.org>.



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