



WCER Highlights

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FAST: Families and Schools Together



FAST helps families nurture their children's education and well-being.

A family's interest and support in a child's schoolwork plays an important part in the child's success. The quality of the family's interaction with the school and with other families also plays a role. A program developed by WCER researcher Lynn McDonald is demonstrating, in schools around the country, that family-school relationships can be improved, and that such enhancement helps children succeed in school.

FAST creates structured opportunities for families of elementary school students to participate in repeated, positive, personal experiences with their children in the school setting.

Lynn McDonald developed Families and Schools Together in 1988 with Family Services in Madison (Wis.), a nonprofit mental health agency. Another national organization, Communities in Schools, develops FAST team trainer capacity with funding from the U.S. Office of Juvenile Justice and Delinquency Prevention to further disseminate FAST.

WCER Highlights



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From the director

Associate director appointed

I am happy to announce the appointment of Stephen N. Elliott as associate director of the Wisconsin Center for Education Research.

Steve is a nationally recognized professor of school psychology, and for many years Steve has been an active principal investigator on WCER projects. Steve and I will work closely together on the full range of responsibilities and issues that come to the WCER Director's office. He will assist in budget oversight and review, proposal stimulation and development, trouble shooting for projects, supervision of support shops, space allocation, and bringing visibility to WCER work.



Elliott

Steve's primary research interests have been assessing and treating young children's social behavior and developing and validating classroom-based tools for assessing students' academic performances and progress. He is also interested in examining ways to more efficiently deliver psychological services to children in schools. Elliott co-directs federal grants concerning consultation services for preschool children and performance assessment of students' achievement.

In this issue of *Highlights* we take a look at innovative research that supports students with

special needs—children in stressed families, children attending underperforming urban schools, students with disabilities, and Latino students at risk of dropping out.

For more information about WCER, visit our Web site at <http://www.wcer.wisc.edu>.

Andy Porter



JEFF MILLER

Porter

McDonald based FAST on research highlighting successful methods of connecting families and schools. At each school the program brings together about a dozen families for eight to ten weekly sessions of social activities. The events may seem simple at first—building a family flag, sharing a family meal, singing together, playing communication games, and parent networking. But these activities help the family develop important communication skills. Parents also receive coaching in one-on-one, nonjudgmental, nondirective play therapy with their children.

When families graduate from the FAST program they join a group of families that meets once a month for two years. FASTWORKS groups are managed by graduates of the program, with support from a collaborative team of culturally compatible parents and professionals.

Research into practice

FAST is based on research in family therapy, child psychiatry, community development, group work, and stress and special support. The program has four goals:

- ▶ Students will enjoy the benefits of increased family involvement in their lives at school.
- ▶ Families will enhance their abilities to nurture the education and well-being of their children and to find new enjoyable ways to learn together.
- ▶ Educators and professionals will use training resources and information to bring schools, families and communities together.
- ▶ Communities will benefit from stronger school-to-neighborhood relationships and an improved workforce.

And FAST works.

- ▶ A family that attends one FAST meeting at the school has an 80 percent chance of completing the program. Children's behavior improves as well, showing a 20 percent or more increase in attention span and a significant drop in disruptive conduct after participating in the program. Family members report feeling closer to one another.
- ▶ Participating in FAST increases parent involvement in schools for three-fourths of families.
- ▶ Data collected on FAST children in seven Head Start centers in Dane County (Wis.), showed statistically significant improvements in children's behaviors and mental health screenings that were maintained six months later. In addition, measures of family functioning and family isolation showed improvements that were maintained over time.

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A sample of FAST programs

- ▶ Six school districts and 18 elementary schools in Santa Clara County (Calif.) use FAST as part of the Silicon Valley Network Initiatives' Healthy Students at School program.
- ▶ The Marion (Iowa) Independent School District has implemented FAST since 1995. At each school the program consists of eight weekly evening sessions for eight to ten families. FAST is presented as a program that benefits all families, in a wish to avoid labeling the program as one for "dysfunctional families" or "at-risk" students.



McDonald



Improving Chicago's schools



An ongoing study of the quality of writing and mathematics assignments in Chicago schools shows that teachers' assignments and students' work generally score low in meaningful intellectual quality. But when teachers assign more intellectually challenging tasks, students produce work of higher intellectual quality. In fact, the difference in the quality of work between students whose teachers gave the most versus the least challenging assignments was at least 40 percentile points across grades 3, 6, and 8 and in both writing and mathematics.

The study is conducted by WCER's Fred M. Newmann, a professor of Curriculum and Instruction at the UW-Madison, and Gudelia Lopez and Anthony Bryk at the Consortium on Chicago School Research. Funded by the Chicago Annenberg Challenge, the goal of this project is to promote a broader understanding of how to improve learning in Chicago's schools. The purpose of the study is to document the "baseline" quality of teachers' assignments and student performance in 1997 and 1998 for later comparison in 2001.

The Annenberg Challenge aims to help schools create more personalized learning environments in which teachers can build a foundation for teaching toward more meaningful intellectual work. New-

mann's research received support from the Chicago Annenberg Challenge, the University of Chicago, the Consortium on Chicago School Research, and WCER. Further reports will be prepared to document and analyze how schools have developed during their first three years of participation in the Chicago Challenge and how networks may have contributed to that development. A final analysis of teacher assignments and student work will be produced after data collection in 2001.

Meaningful intellectual work

The dominant indicator of student learning in Chicago is students' scores on the standardized Iowa Tests of Basic Skills. But Newmann, Bryk and colleagues are interested in how Chicago's students gain opportunities to succeed in more complex intellectual work.

"If all students could demonstrate basic competence in writing, speaking, and computing, this would represent a vast improvement," write Newmann and co-authors. "But it would be only a beginning. Productive work, responsible citizenship, and successful management of personal affairs are more demanding than giving correct answers and following proper procedures for the work traditionally assigned in school."

The ways in which adults work with knowledge differ from the ways that students usually work with knowledge in school. For example, an engineer who designs a bridge shows more than just a knowledge of engineering concepts—he or she designs something of value that is used and appreciated by others.

The distinctive characteristics of meaningful intellectual work such as this are: construction of knowledge; through the use of disciplined inquiry; to produce discourse, products, or performances that have value beyond school. These were the three criteria for authentic intellectual work described by Newmann and other WCER researchers, Gary Wehlage and Walter Secada in 1995. These criteria served as the basis for studying teacher practice and student performance in



Students produce work of higher intellectual quality when teachers assign more challenging tasks.

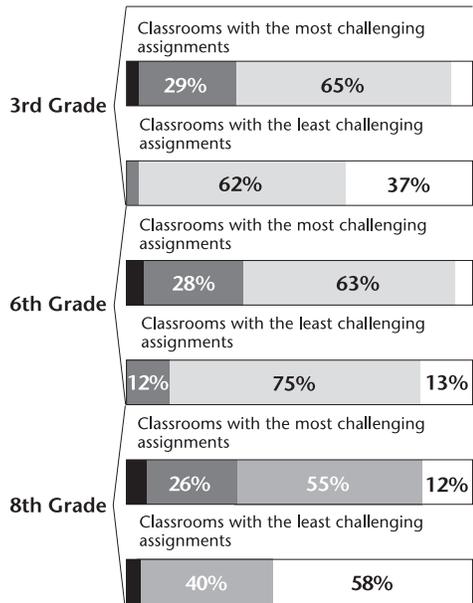


Bryk



Newmann

Students whose assignments were more challenging produced higher quality work in mathematics



Source: The Quality of Intellectual Work in Chicago Schools: A Baseline Report

WCER's nationwide study of restructuring schools from 1990–1995 when Newmann directed the Center on Organization and Restructuring of Schools (CORS).

Newmann and colleagues at the Consortium applied the CORS criteria to study examples of assignments given for writing and mathematics in grades 3, 6, and 8 and the written work of Chicago students in response to those assignments (see sidebar). Chicago teachers were trained to score the quality of assignments and student work according to more specific standards that represented the three CORS criteria for authentic intellectual quality. The total scores for the three standards on the assignments were then divided into four categories, from highest to lowest, and the categories were labeled to represent

four levels of intellectual challenge: no challenge, minimal challenge, moderate challenge, and extensive challenge. The total scores for the three standards on the students' actual written work were also divided into four categories, from highest to lowest, and the categories were labeled so that the highest scoring work was "extensive meaningful intellectual work" followed by "moderate," "minimal," and "none."

Minimal intellectual challenge

The study found that, at the third-grade level, writing and mathematics assignments scored about equally. For example, 43 percent of the third-grade writing assignments fell into the "no challenge" category. Typically these assignments called for little construction of knowledge, requiring students only to fill in the blank or provide short answers, with minimal opportunity for the students to connect the assignments to their daily lives.

In math, the same percentage, 43, of the third-grade assignments provided "no challenge" for the students. Assignments that fell into this category demanded only routine application of algorithms or memorized mathematics facts, did not require any extended communication about the problem, and did not provide students with the opportunity to connect mathematics to their daily lives.

Performance reflects expectation

Overall, writing assignments demanded more challenging work than mathematics assignments, and this pattern was evident in student performance. For student writing, at each grade level at least 17 percent of the written work was categorized as "extensive meaningful intellectual work," indicating that the student work demonstrated substantial construction of knowledge and elaborated written communication, and had satisfactory mastery of grammar, usage, mechanics, and vocabulary for the grade level. But in mathematics, less than 2 percent of student work at each grade reached the "extensive" level.

"It stands to reason," writes Newmann and co-authors, "that if an assignment makes low demands for meaningful intellectual work, students will almost surely score low on the standards for meaningful performance. They will have virtually no opportunity to show proficiency in construction of knowledge and disciplined inquiry. In contrast, when teachers require meaningful work, students will have the opportunity to demonstrate such proficiency."

But in addition to assigning challenging work, teachers must offer instruction that helps students

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Examples of assignments

A high-scoring assignment for Grade 6 writing:

"Write a fable. Choose two animal characters. Think of some advice that will work as the moral of a fable. Then write a short fable that illustrates the moral. The fable must include conversation (dialogue)."

A low-scoring assignment for Grade 6 writing:

The teacher modeled sentence diagramming on the board, and the class practiced. The teacher explained the parts of speech, then told the students to complete the diagrams for five sentences on a worksheet.

A high-scoring assignment for Grade 6 mathematics:

In an eight-week period, each student chose a stock and followed it. Examples included IBM, Disney, and Nike. Each student recorded the prices of his or her stock, indicating gains and losses on a graph flip chart on the wall. The culmination of the unit was a test that asked students to compute gains and losses of a given stock for 15 time intervals over about two months and to display the information on a graph.

A typical assignment for Grade 6 mathematics:

A worksheet required students to solve 50 almost identical problems involving multiplying fractions.



Transforming education for Hispanic youth

Forty percent of Latino students leave school prior to graduation. Thirty-five percent of Latino students are held back at least one grade. Forty-seven percent of Latino students are overage by grade 12.

For many Hispanic students in the United States, school is a punishing place—one they understandably are eager to leave. Dropping out can seem like a logical response to poor instruction and unsafe, dirty, and overcrowded schools.

A recent monograph describes solutions to the Hispanic dropout problem. WCER's Anne Turnbaugh Lockwood and Walter G. Secada* relate several accounts of effective practices in which educators, community members, college students, and Hispanic youth worked together toward goals that include high investment in learning and achievement. As part of this process, nurturing relationships between school staff and students bond youth to school and to the promise of a better future.

Unfortunately, these positive experiences are far too infrequent for Hispanic youth. Most schools with high concentrations of Hispanic youth have not been as successful, the monograph shows. In fact, most schools serving Hispanic youth need dramatic restructuring, innovation, and change—especially an infusion of hope combined with practical ideas—to serve those youth severely at risk of dropping out.

Many Latino students in U.S. schools experience insensitive, unresponsive, or low-quality instruction; the common school practice of tracking, which contributes to the low quality of instruction Latino students frequently receive; and instruction that is frequently delivered in deteriorating physical environments where violence is a constant, threatening presence.

The monograph, *Transforming Education for Hispanic Youth: Exemplary Practices, Programs, and Schools*, makes broad recommendations for educational practice and policy and suggests immediate steps that schools can take to address the Hispanic dropout problem. Teachers must be challenged to think differently about what and how they teach. Textbook publishers need to produce culturally relevant materials. Community school boards should invest in appropriate materials for school staff. Schools of education need to produce a teacher workforce that can meet what our diversified population says it needs.

"We must diversify the teacher workforce ethnically by personal background characteristics," Secada says. "Schools must retool their professional development so that it builds a knowledge base for teachers who work with Hispanic students. Schools must understand, at a deep level, that we live and work in a multicultural world."

The next step, the authors say, is to assess teachers' understanding of how different students and communities must also be educated about the length of time involved, because in-depth, long-lasting change requires time, continuous refinement, and sustained financial support. And when schools detrack their instruction, teachers need to be taught to revamp traditional modes of instruction as well so that they can teach heterogeneous groups successfully.

The monograph is available from the CC-VI Web site (<http://www.wcer.wisc.edu/ccvi>) and from the Web site of the National Clearinghouse on Bilingual Education (<http://www.ncbe.gwu.edu/ncbepubs/resource/>).

*About the authors

Walter G. Secada is professor of education at the UW–Madison and directs the Comprehensive Center—Region VI (CC-VI) at WCER, UW–Madison. Secada also directed the Hispanic Dropout Project, a seven-member panel appointed in 1995 by U.S. Secretary of Education Richard Riley to call attention to the nature and scope of Hispanic student dropouts and to recommend actions that can be taken at the federal, state, and local levels to reduce the dropout rate of Hispanic youth.

Anne Turnbaugh Lockwood is an associate researcher at the Comprehensive Center—Region VI. An education writer and policy analyst, she is the author of five books and has written non-technical papers for the Hispanic Dropout Project.



Secada and Lockwood documented many successful programs.

Contextualized math problems appeal to students with disabilities

The mathematics skills of American students are woefully inadequate for the kinds of problem solving required in the workplace, and the outlook for students who have special difficulty in learning mathematics is even gloomier. Studies have reported that 16- and 17-year-old students

with learning disabilities score at about the fifth-grade level in computation and can demonstrate only limited proficiency in tests of minimum competency at the end of secondary school.

But a recent study of learning disabled students by WCER researcher Brian Bottge shows that most students solving contextualized mathematics problems were better at noticing critical features of those problems than were students who learned with standard types of word problems.

Several students in Bottge's study were able

to apply what they learned in the contextualized problem setting to other tasks. Students solving contextualized problems used their critical skills to score significantly better on a contextualized posttest and a transfer task than comparison groups of students who worked standard word problems. Bottge calls this transfer of skills encouraging, in light of consistent findings showing that transfer of skills is exceedingly difficult to achieve among students, especially those with learning difficulties. The findings suggest that situating problems in a meaningful context results in significant differences in student performance.

Teaching problem-solving

Bottge is a professor of rehabilitation psychology and special education at UW–Madison. His study, funded by the James S. McDonnell Foundation, Cognitive Studies for Educational Practice, investigated the effect of contextualized math instruction

on the problem-solving performance of 17 middle school students in one remedial class and 49 middle school average-achieving students in two pre-algebra classes. The study compared the effects of word problem instruction and contextualized problem instruction on the students' computation skills and problem-solving performance (see sidebar, "Bart's Pet Project").

The weakness in problem solving of students with disabilities can be traced to confusion over what constitutes problem solving and how to teach it, Bottge says. "Some of the most intractable teaching practices in remedial classrooms involve withholding introduction of more complex and interesting content until students master easier material" he adds. These practices are fostered by beliefs among many educators that (a) math is a set of rules that require memorization, (b) computation problems are always solved by using algorithms, (c) problems always have one correct answer, and (d) people who use mathematics are geniuses.

But real-world problems are often ill-defined and their solutions do not follow a linear, prescribed route. The challenge for teachers is to find problem-solving activities that are set in "real-world" situations, are important to the learner, and are manageable in the school context.

Anchored instruction

One approach to improving student mathematics performance is to help students follow the cognitive trail of expert problem solvers and monitor students' progress as they reach the problem goal. Yet there is little evidence to show that students maintain these gains in the experimental settings or successfully generalize them to other situations. The failure to maintain and generalize results has been a frustration throughout this century.

More promising is the approach known as "anchored instruction." The anchors, such as those provided by video-based vignettes, provide students with motivating and meaningful contexts in which they can develop their "intuitions" in combination with their computation and algorithmic skills to arrive at a plausible solution.

Earlier research showed that high school students with learning problems in mathematics were able to solve contextualized video-based problems, but it did not test whether students could actually apply what they had learned to a context-

Bart's Pet Project

A video-based lesson called *Bart's Pet Project* asked students to determine whether the subject of the story, Bart, could construct a pet cage out of wood with the least amount of waste so there would be enough money left over to buy a pet. Over several days, groups of students tried to solve the problem. They shared the videodisc controller, searched the video, discussed ideas, and recorded their procedures. The teacher answered questions to help clarify obvious misconceptions about the problem, but did not provide specific ways to solve it. (There were three possible solutions to the problem.) When a group of students had reached a reasonable solution, the teacher asked them to describe their findings and encouraged groups to find the other two solutions.

A control group of students solved standard single-step and multistep work problems that paralleled the content of Bart's pet project.



Bottge



Remedial classrooms should emphasize students' skill strengths rather than their deficiencies.

tualized "real-world" task such as planning and building a wood project from schematic plans. The goal of Bottge's study was to replicate and extend previous findings by investigating students' performance in several problem-solving contexts and testing their ability to transfer these performances to an authentic task.

Build on students' strengths

The results of Bottge's study support the practice of situating problems in a meaningful context for improving the math problem-solving skills of low- and average-achieving students. Statistically significant differences were found on the contextualized problem test and on the transfer task for students working the contextualized problem in remedial and pre-algebra classes. Differences in computation and

word problems were not significant. In addition, the highest-achieving students in the "contextualized problem" and "word problem" groups were able to use what they learned to plan and build two skateboard ramps.

This study highlights important strengths, such as insights and motivation, that many students, especially those who experience difficulty learning mathematics, bring to the classroom. Unfortunately, instruction for these students usually targets identified weaknesses rather than building on strengths. Such instruction may contribute to a sense of hopelessness and concomitant behavior problems, Bottge says, and this situation recurs in education despite emphases on standards, authentic learning, and performance-based assessment.

To better affect middle- and high-school students' lives, educators must investigate new contexts for promoting and motivating student thinking, Bottge says. "The power of video technology, matched to suitable learning tasks, can result in positive results for many disenchanting students. It's time to use our resources to make learning for all students more meaningful and attainable."

For more information, contact Bottge at bbottge@education.wisc.edu or (608) 265-5648.

Improving Chicago schools

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construct knowledge through disciplined inquiry. In short, giving assignments that demand meaningful intellectual work is a necessary, though not sufficient, condition for students to demonstrate meaningful intellectual performance.

"Teaching basic skills and preparing for standardized tests have their place," the report concludes, "but if they drive out opportunities for more challenging work, they deprive students of the education they need for success in vocation and citizenship."

For a copy of the full report contact the Consortium on Chicago School Research, (773)-702-3364.

Madison-Chicago collaboration

The research summarized in this article was carried out through collaboration between researchers at WCER and at the Consortium on Chicago School Research. The Consortium was initiated in 1990 as an independent federation of Chicago area organizations that undertakes a range of research activities to assist the implementation of school reform, assess its progress over time, and more generally support school improvement in Chicago. The Consortium is a not-for-profit organization receiving core funding from The Joyce Foundation, The John D. and Catherine T. MacArthur Foundation, and The Spencer Foundation.



WCER HIGHLIGHTS STAFF

Director Andrew Porter
Editor Paul Baker
Editorial Consultant Deborah Stewart
Production Office of University Publications

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Families and schools

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Ongoing research is measuring the effectiveness of FAST implemented specifically for students experiencing difficulties with social interactions or classroom behaviors, for American Indian students ages 5 to 9 years, and for third graders attending inner city schools who are at risk of drug abuse, delinquency, and school failure.

Breadth of impact

In 1990 the state of Wisconsin began encouraging school districts to use FAST and provided \$1 million a year in funding. Family Service America, an international social services organization, accelerated expansion of FAST nationwide in 1993, with financial support from the DeWitt-Wallace Reader's Digest Foundation. In a June 1999 training there were FAST trainers from 12 states and 3 countries. Edgewood College, Madison, Wis., offers graduate credits in family therapy for students who participate in FAST team training.

FAST is now used in 34 states and five countries. McDonald is working to make sure that FAST is adopted in more schools and districts nationwide. Funding for these projects is provided by the Office

of Special Education and Rehabilitative Services, Field-Initiated Studies, U.S. Department of Education, and the U.S. Department of Health and Human Services.

For more information, contact McDonald at mrmcdona@facstaff.wisc.edu or visit the FAST web site at <http://www.wcer.wisc.edu/fast/>.

FAST works to

- ▶ strengthen parent-child relationships and empower parents to become primary prevention agents for their children.
- ▶ improve students' behavior and performance in school, empower parents in their role as partners in the educational process, and strengthen the students' and families' affiliation with the school.
- ▶ prevent alcohol and other drug abuse in the family by increasing the family's awareness and knowledge of substance abuse and its effect on child development and by linking the family with appropriate assessment and treatment as needed.
- ▶ reduce the stress that families experience in daily life.

Wisconsin Center for Education Research
School of Education
University of Wisconsin–Madison
1025 West Johnson Street
Madison, WI 53706

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