



# WCER RESEARCH highlights

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## Aligning Assessments and Standards

Eight reviewers sit at a long table in a conference room. Their notebook computers communicate with each other and with a database via a wireless network. Papers are scattered across the table.

The silence is deafening. The tension in the room is palpable. This project requires extended thinking, over a period of some hours, with multiple ways of solving problems. High-level reasoning is required; developing an argument is necessary.

But these people are not taking a test. They are evaluating a test. The evaluators are reading sample items from a state's learning standards, then assigning 'depth of knowledge' levels to each content objective, each assessment item, and to each objective targeted by each assessment item.

"I gave this item a Level 3, but I was torn," one says. "There's potential for higher order thinking. But it could be a 2, because often we don't prompt students to that level. So this item is halfway between a 2 and a 3."

The No Child Left Behind Act requires states to align their performance standards and assessments. But correspondence between state-level standards and assessments tends to

be only moderate, particularly in terms of 'depth of knowledge' and 'range of knowledge.'

Based on years of working with standards and assessments, WCER Senior Scientist Norman Webb has designed a system for measuring the degree of alignment. Too often, Webb says, education systems are fragmented, so teachers and students get mixed messages about goals and expectations. In the absence of clear principles of alignment, learning expectations can be lowered for some students while being raised for others. That creates potential inequities.

Webb emphasizes that alignment is the degree to which expectations and assessments work together to improve and measure students' learning. As such, alignment is a quality of the relationship between expectations and assessments and not a specific attribute of either of these system components. "These parts of the education system should work together to help students achieve at higher levels of understanding," Webb says.

Whether it's in language arts, mathematics, social studies, or science, expectations and assessments should agree on the underlying concepts and what it means to "know" these concepts, Webb says. Aligned expectations and assessments describe and represent how students link concepts and how their instructional experiences should be organized.

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**FROM THE DIRECTOR**

**Adam Gamoran**

In this issue of Research Highlights we read about developing school leaders, increasing social capital among families, and better aligning state standards and assessments.

For some time student services staff have developed and managed Individualized Education Plans for students with special needs. Now these staff are lending their expertise and becoming leaders in developing data-driven instructional systems, as we learn from a recent study by Richard Halverson.

We also read about a program that enriches social capital among families and schools. WCER's Families and Schools Together project continues to work nationwide to strengthen social ties that are so important in students' success in school and life.

Finally, Norman Webb's cutting edge work helps states to better align their standards and assessments, and to better pinpoint students' depth and range of knowledge.

Adam Gamoran  
WCER Director  
Professor, Sociology and Educational  
Policy Studies



The degree of alignment of expectations and assessments can be determined using four criteria:

- **Categorical Concurrence** measures the extent to which the same or consistent categories of content appear in the standards and the assessments. The criterion is met for a given standard if there are more than five assessment items targeting that standard. Six items are assumed as a minimum for an assessment measuring content knowledge related to a learning goal and as a basis for making some decisions about students' knowledge of that learning goal.
- **Range-of-Knowledge Correspondence** determines whether the span of knowledge expected of students on the basis of a standard corresponds to the span of knowledge that students need to correctly answer the corresponding assessment items or activities. The criterion is met for a given standard if more than half of the objectives that fall under that standard are targeted by assessment items.
- **Balance of Representation** measures whether objectives that fall under a specific standard are given relatively equal emphasis on the assessment. An index value of 1 signifies perfect balance and is obtained if the corresponding items related to a learning goal are equally distributed among the objectives for the given learning goal. Index values that approach 0 signify that a large proportion of the hits are on only one or two of all of the objectives hit.
- **Depth-of-Knowledge Consistency** measures the degree to which the knowledge elicited from students on the assessment is as complex within the context area as what students are expected to know and do as stated in the standards. The criterion is met if more than half of targeted objectives are hit by items of the appropriate complexity. For example, assume an assessment included six items, related to one learning goal and that students are required to answer correctly four of those items to be judged proficient—i.e., 67% of the items. If three items, 50% of the six items, were at or above the depth of knowledge level of the corresponding Standards, then for a student to achieve a proficient score would require the student to answer correctly at least one item at or above the depth of knowledge level of one learning goal.

## Other Resources

A similar alignment resource, WCER's Surveys of Enacted Curriculum project, encourages teacher reflection and conversation about classroom practice and instructional content. Teachers can compare their own practice and instructional content to responses by other teachers around the country and within their school or district. Participating states, schools and districts use aggregated teacher reports to develop a baseline of information about teacher practice in mathematics, science and English language arts, or to inform professional development or school improvement planning efforts.

<http://seconline.wceruw.org/secWebHome.htm>

## Depth of Knowledge Levels

The descriptions for each of four Levels for mathematics help to clarify what the different levels represent in each subject area.

**Level 1** (*recall and reproduction*) is the recall of information such as a fact, definition, term, or a simple procedure, as well as performing a simple science process or procedure. A student answering a Level 1 item either knows the answer or does not.

**Level 2** (*skills and concepts*) includes the engagement of some mental processing beyond recalling or reproducing a response. The content knowledge or process involved is more complex than in Level 1. Keywords that generally distinguish a Level 2 item include 'classify,' 'organize,' 'estimate,' 'make observations,' 'collect and display data,' and 'compare data.'

**Level 3** (*strategic thinking*) requires reasoning, planning, using evidence, and higher level of thinking than the previous two levels. The complexity results because the multistep task requires more demanding reasoning.

**Level 4** (*extended thinking*) tasks make high cognitive demands and are very complex. Students are required to make several connections to related ideas within the content area or among content areas—and have to select or devise one approach among many solution alternatives. This level requires complex reasoning, experimental design and planning, and probably will require an extended period of time, either for the science investigation required by an objective, or for carrying out the multiple steps of an assessment item.

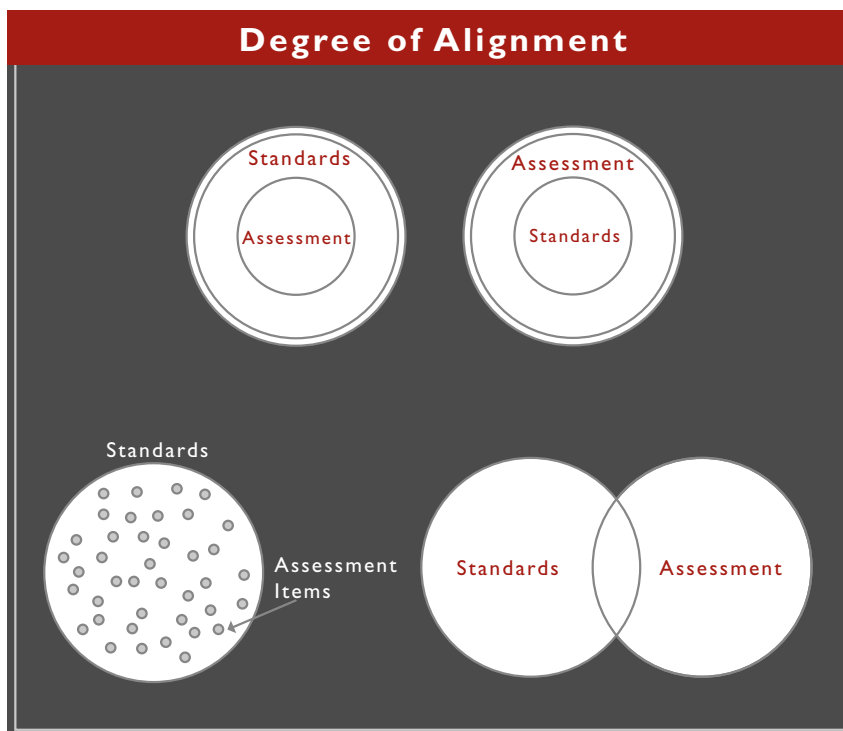
## The Online Alignment Tool

A recently developed Web-based tool by Brian Vesperman moves the alignment process away from paper and pencil and brings it into the electronic age, allowing states to more quickly evaluate that alignment. Some 25 states have used WCER's online Web Alignment Tool (WAT) <http://www.wcer.wisc.edu/wat/index.aspx> to guide and automate the process. District and state education staff, for example, use results from alignment analysis to refine standards and to identify more appropriate assessment items. For each alignment criterion, an acceptable level is defined by what would be required to assure that a student meets the standard(s).

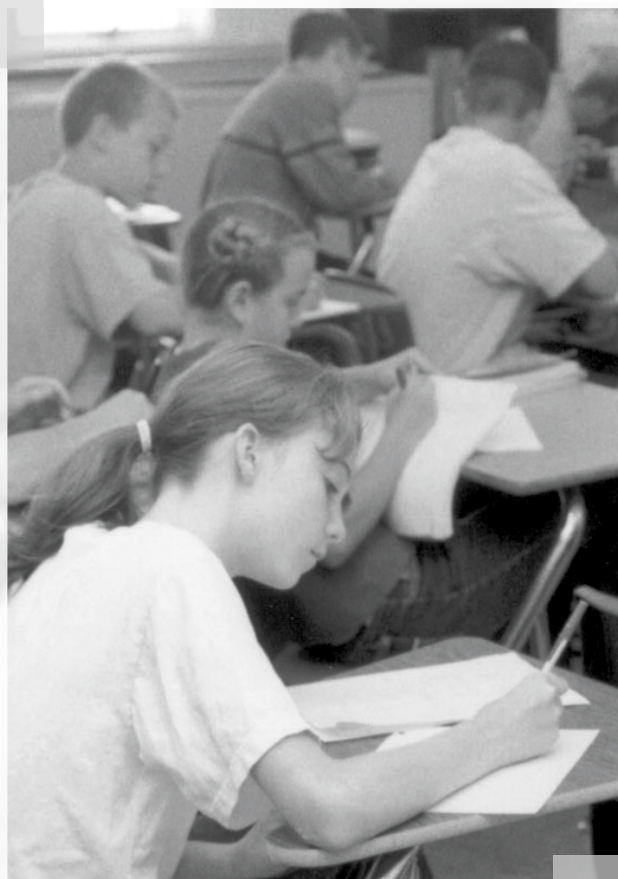
The WAT is free and available to all. It requires some training and effort to learn how to use it, but anyone can register as a group leader and use the tool to conduct a study.



**Norman Webb**



Good alignment is shown in the lower left-hand circle. The others show kinds of misalignment.





## Supporting Families & Children

According to the 2006 report *America's Children in Brief: Key National Indicators of Well-Being*: \*

Births to unmarried women constituted 36 percent of all births in 2004, reaching a record high of nearly 1.5 million. Over half of births to women in their early twenties, and nearly 30 percent of births to women ages 25-29, were to unmarried women. The proportion of children under age 18 living with two married parents fell from 77 percent in 1980 to 73 percent in 1990, to 69 percent in 2000, and to 67 percent in 2005. Among children under age 18 in 2005, 23 percent lived with only their mothers, 5 percent lived with only their fathers, and 4 percent lived with neither of their parents. Eleven percent of 8th graders reported having five or more alcoholic beverages in a row in the last 2 weeks, and 28 percent of 12th graders did as well. Nine percent of 8th graders reported using illegal drugs in the previous 30 days, as did 23 percent of 12th graders.

\*Source: <http://www.childstats.gov/>  
The Federal Interagency Forum on Child & Family Statistics

**T**he best way to prevent students' social and academic problems in school is to foster strong families. A family's best source of strength lies in other families.

Getting families together has been a career-long crusade for UW-Madison professor Lynn McDonald. As an in-home family therapist, McDonald saw distressed youth and families who were often isolated. She believed it was possible to strengthen families by strengthening protective factors. She knew that families who demonstrate sound communication skills and who have consistent social support were less likely to have children who experience school failure, substance abuse, delinquency, and violence.

McDonald knew that most social programs create problem-specific approaches and agencies. For example, there are specialized programs for preventing substance abuse, domestic violence, delinquency, and child abuse. She believed that such a fractured approach tears the families apart. She developed Families and Schools Together (FAST) to bring the family together again. FAST addresses a range of problems with a comprehensive, systemic approach to social networking.

Children and their parents enrolled in FAST come into the school one evening per week, for 8 weeks, where they enjoy food, family games, sharing, and singing. The meeting format is the same each week. Research-informed activities structure encounters between parents and school child, between parents and the whole family, between parents and one other parent, between parent and a parent group, and between parents and professionals. Parents get to spend 15 minutes of uninterrupted time with their child—a luxury these days. Parents share advice and support for their parenting.

Meetings are run by a highly trained team including two community-based agency representatives, a teacher, a school representative, and a parent from the school (a FAST parent graduate, when possible).

McDonald says children look forward to the familiar routines. The repetition each week of going to the school as a family, for a meal and visits with other parents, becomes a comfort. After 8 sessions there's a graduation ceremony complete with caps and diplomas. Then families continue participating at monthly FASTWORKS™ sessions for 2 years. Group cohesion among the parents strengthens. They find that they all live in similar conditions in the same areas, they all have children in the same age group, and all share strengths and challenges.

### Research-based structure

The family activities are based on family therapy research. They include structured communication in which each person takes a turn to speak, makes a positive inquiry to other family members, and practices listening with respect. If family members can authentically say to each other: I want . . ., I think . . ., and I feel . . ., the family is strong.

All families, over time, repeat interactive routines. Some routines are negative and destructive. FAST gives families opportunities to repeatedly rehearse a set of positive routines. For example, each family sits at a designated table and shares a meal. This is more important than it may seem: Research shows that the single predictor of high SAT scores is eating a family meal, spending time together chatting and connecting over the food.

Youth drug abuse often begins in the absence of good relationships with parents. In fact, research shows that good relationships with parents protect against drug abuse. FAST builds relationships at multiple levels of the child's social environment: Targeted relationships increase children's involvement with their parents, their families, the parents of other youth at the school, with a positive peer group, with school staff, and with representatives from community agencies.

### Recent awards and recognition

McDonald's FAST program is the subject of a recent cover story in the *American School Board Journal*. It also has received several awards. This past December, the U.S. Department of Justice's Office of Juvenile Justice and Delinquency Prevention awarded FAST its "exemplary" rating, placing it among those programs that demonstrate robust empirical findings and use a scientific evaluation design. FAST now appears in the top category on two widely used lists of best practices.

Philadelphia Mayor John F. Street called for more FAST programs in the city as part of a new anti-truancy initiative. His effort aims to ensure school-aged children and youth are in school, that their parents are aware of truancy laws, and that the city, the school district and family court plan to hold them accountable.

Last October FAST was recognized in the Harvard Family Research Project's report, "Lessons from Family-Strengthening Interventions: Learning from Evidence-Based Practice." Its program evaluations found that FAST families were more likely to seek substance abuse treatment or mental health counseling at the completion of the program, to pursue adult education, and do volunteer work in the community and become community leaders.

Last August FAST won an international Korber Award. The theme of the award was "Transition in Life. Assistance with Transitions." The competition rated projects addressing transition situations in the life of an individual or a social group.

More: [www.wcer.wisc.edu/FAST](http://www.wcer.wisc.edu/FAST)



#### RECENT ARTICLES:

McDonald, L., Moberg, D.P., Brown, R., Rodriguez-Espiricueta, I., Flores, N.I., Burke, M.P., & Coover, G. (2006). *After-school multifamily groups: A randomized controlled trial involving low-income, urban, Latino children {Abstract}*. *Children & Schools*, 28 (1), 25-34.

Terrion, Jenepher L. (2006) *Building Social Capital in Vulnerable Families: Success Markers of a School-Based Intervention Program*. *Youth & Society*, 38 (2), 155-176.

Warren, K.W., Moberg, D.P., & McDonald, L. (2006). *FAST and the arms race: The interaction of group aggression and the Families and Schools Together program in the aggressive and delinquent behaviors of inner-city elementary school students*. *The Journal of Primary Prevention*, 27 (1), 27-45.

**If family members  
can authentically say**

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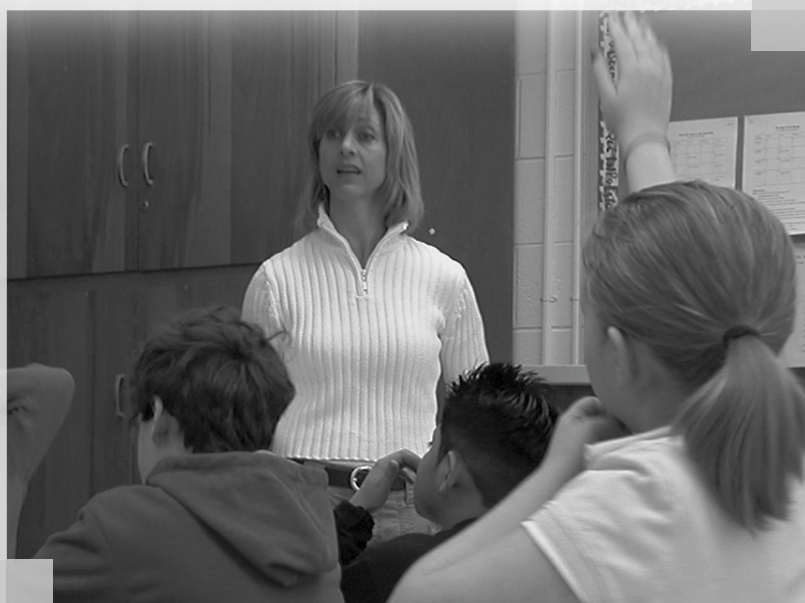
**I think . . . ,**

**and I feel . . . ,**

**then the family is strong.**

## What is FAST?

**FAST** is an award-winning model program for preventing substance abuse, juvenile delinquency, school failure, abuse and neglect, and mental health problems. Dr. Lynn McDonald developed FAST in 1988. It was originally designed to serve teacher-identified, at-risk 5- to 12-year-old elementary school youth and their families; however, universal recruitment is now the recommended strategy. Since its beginnings in Madison, Wisconsin, the FAST program is now regularly implemented nationally in 45 U.S. states and internationally in five countries (Canada, Germany, Australia, Austria, and Russia). All family activities in the FAST program—games, meals, and songs—are based on research.



## Ramping Up Data Expertise

“I want to call attention to smart people who are doing innovative things in their schools,” says Richard Halverson.

In particular he’s watching as student services staff ramp up their expertise in using student performance data to help their schools meet performance goals.

Halverson is an education professor at the University of Wisconsin Madison, where he documents how schools’ local, home-grown solutions for student achievement help meet Adequate Yearly Progress (AYP) goals. Working with educators in several Wisconsin schools, Halverson and colleagues nurture local talent, evangelize the ideas, help schools meet Federal accountability requirements, and mentor staff as they become more savvy in using school performance data.

The No Child Left Behind (NCLB) Act has pressed school leaders to develop their own ways to translate student testing data into the kinds of information they can use to improve student learning. Halverson says educators now work in a “data-driven paradigm.”

Analyzing data and using it to improve instruction is often abstract and challenging. District-level specialists and external consultants provide some of this expertise. But Halverson sees some of this knowledge within the schools, just waiting to be scaled up. School student services staff, including school psychologists, Title I teacher, special educators, and social workers, have used achievement data for years—long before NCLB.

For example, special educators have long developed federally mandated IEPs (Individualized Education Plans) for students with special needs. (IEPs provide action plans with measurable annual achievement goals. They address both academic needs

and functional needs and measure students’ progress through the general school curriculum.) Halverson found that school leaders reasoned, “Why not turn to these local experts to meet the demands of high-stakes accountability? Let’s use their practices as a model for designing student-level interventions school wide.”

Halverson’s project, Data-Driven Instructional Systems (DDIS), traces the ways local school leaders collect data, analyze it, design and align programs, and use formative feedback (see illustration, “Six Stage Cycle,” page 7).

As one example, Halverson points to Malcolm School. It’s a Midwestern urban K-5 school with a highly mobile population of 220 children. About 70 percent of Malcolm’s students qualify for free or reduced-price lunches. The school’s proportion of minority students is among the highest in its district. Malcolm is considered a school-wide Title I school and is eligible for state class-size reduction funding. In spite of the challenging population, Malcolm has improved its student standardized test scores to the point that they now rival those of any other school in the district. Halverson found that Malcolm leaders and teachers had developed several data-driven instructional practices to guide teaching and learning. The practices addressed program-level concerns and student-level concerns. The school psychologists, Title I teacher, special educators, and social workers helped the staff make sense of data from program-level and student-level interventions.

Another school in an urban district, Harrison, is a K-8 school serving a 500-student population that’s nearly 30 percent Asian, 10 percent African-American, 20 percent Hispanic and 50 percent White. Seventy percent of Harrison students qualify for free or reduced-price lunches, and 30 percent are English Language Learners.

Harrison’s transformation began with a focus on literacy and curriculum alignment. At the same time, staff developed an

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academic and behavioral support system that used data to help determine program-level and student-level interventions. Harrison piloted a district-wide initiative to use problem-solving as a method to provide school-wide support for struggling children. Harrison's problem-solving team is a small group of teachers and parents who work together with student services staff to develop a data-driven plan. Their collaboration demonstrates a possible link between current practices in special education and a better future for organizing public schools.

Harrison's version of problem-solving reflects the IEP process of referral, team staffing, and an intervention plan that includes data-based criteria for success. The transition to problem-solving at Harrison overcame the difficulties of bringing together the previously separated roles of classroom teachers, special educators and school psychologists in the problem-solving team.

In these two schools, leaders repurposed the practices of categorical specialists, and the roles of pupil support specialists, to create new forms of data-driven student support. Instead of focusing only on students designated for special education, the IEP process in both schools was adapted to serve as an intervention strategy for developing learning plans before students were assigned to special education.

Resource reallocations at Harrison and Malcolm were as much about changing professional culture as drafting a new budget. The schools reallocated and repurposed staff resources to provide a critical instructional support system for all students. That reflects a significant aspect of principal leadership expertise at both schools. The costs can be figured in terms of the human capital (the expertise) of the school leadership team to recognize which staff members would be able and willing to step into new instructional leadership roles in the school.



**Richard Halverson**

More about the DDIS project:

<http://ddis.wceruw.org/>

Funding: National Science Foundation

See also WCER's Working Paper Series at [www.wcer.wisc.edu/Publications/Workingpapers](http://www.wcer.wisc.edu/Publications/Workingpapers)

## Six Stage Cycle



## IEP: Special Education

Special education, and the IEP in particular, have set an important precedent for individual student program planning since 1975's Education for All Handicapped Children Act. The IEP sets a student-centered path to instructional interventions as the school customizes resources to the needs of individual students. The significant aspects of the IEPs are the mandatory, data-driven components of the process: identification and evaluation, staffing, plan construction, and plan review.

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