Mid-Western Educational Researcher

Volume 15 | Issue 1 Article 3

2002

Presidential Address: The Power of Data Utilization in Bringing About Systemic School Change

E. Jane Williams

Presidential Address

The Power of Data Utilization in Bringing About Systemic School Change

E. Jane Williams
Affiliation ? ? ? ?

Introduction

Dr. Mary Diaz, in her address at the 2000 MWERA Conference, described the fundamental intent of standards-based reform as,

> …transformation of public education from factory-model schooling into communities of learners where all students experience a rich and challenging curriculum that holds the possibility of preparing them for the demands and opportunities of life and work in the 21st century. The intent is not only to hold all students to high standards of performance, but also to provide teachers … with the tools, processes, opportunities, and supports that will enable them to help students across the socio-economic spectrum reach for and achieve high levels of performance according to their "multiple intelligences" (Thompson, 1999, p. 46 cited in Diaz, 2001).

Dr. Diaz' words resonated deeply with me because, for the last 6 years, I have been the Director of the Research and Evaluation Center for a project that focuses on providing teachers with the "tools, processes, opportunities, and support…" that Dr. Diaz referred to in her presentation. The data that are collected, analyzed, and reported from the project guide the ongoing workings of the project at many levels, from classroom teachers to boards of education. There is more to the change process than desire, beliefs or even dedication; we have to know whether or not we are making a real difference. That is, administrators, teachers, university trainers, **each** must analyze and use the data in order for change to move in the desired direction! Assessments with strong validity and reliability when analyzed and used will direct and guide the change process.

The change process must include creating and fostering purposeful learning communities. Senge et al. (2000) and Fullan (2001) emphasize the importance of learning communities in bringing about positive educational change and the solving of complex problems. Creating and fostering purposeful learning communities involves capacity building. Darling-Hammond, 1993, explains capacity building by first describing a new mission for education—

> one that requires schools not merely to 'deliver instructional service' but to ensure that all students learn at high levels. In turn the teacher's job is no longer to 'cover the curriculum' but to enable diverse learners to construct their own knowledge and to develop their talents in effective and powerful ways."

She continues by stating that this new model for school reform is

> one in which policy makers shift their efforts from *designing controls* intended to direct the system to *developing the capacity* of schools and teachers to be responsible for student learning and responsive to student and community needs, interests, and concerns. Capacity-building requires different policy tools and different approaches to producing, sharing, and using knowledge than those traditionally used throughout this country" [Italics in original.] (p. 754).

This new model for school reform requires a change process wherein schools use their data to build capacity. Thus, we need to create and foster learning communities to help schools build capacity.

Context for Examples

If we are to conduct evaluation that reveals the essential processes of positive change, we must look at data emerging from comprehensive approaches to solving problems. These settings offer insights. One example is the Literacy Collaborative.[1] Literacy Collaborative is a classroom-based, comprehensive school reform project designed to increase literacy achievement for all students through collaboration between the teachers/administrators in a school and a training institution. The training institution is most often a university but can also be a school district or consortium of districts. The Literacy Collaborative helps elementary schools increase literacy achievement by building the capacity of communities of teachers, and of schools; it also helps districts provide continuing professional development to their teachers locally. Capacity is built through extensive professional development, and through the coaching of literacy coordinators and classroom teachers.

Development of the primary level training program began in 1986 at The Ohio State University, with a series of teacher study groups. Formal training of primary level literacy coordinators began in 1993 with the training of literacy coordinators from 9 schools in 3 districts. By the beginning of the 2001-02 school year, the Literacy Collaborative network has grown to include 655 schools in 194 districts in 27 states. It

has also grown into three levels: the training of primary level literacy coordinators, intermediate level literacy coordinators, and trainers. This article will address only the training of the primary level literacy coordinators.

Training/Professional Development

The implementation of Literacy Collaborative includes ongoing training to expand skills in teaching, long-term professional development, as well as safety nets, which include the availability of Reading Recovery for the lowest achieving first graders. During the initial training year school-based literacy coordinators are trained to use the framework of research-based reading, writing, and word study practices. The literacy coordinator is the first person trained and he/she in turn trains the teachers at the building over the next few years. The literacy coordinator teaches children, demonstrates research-based teaching practices, provides in-class coaching, and coordinates data collection on every child's achievement. A key component to all the training is coaching. Research has shown that the most effective way for teachers to effectively retain and implement new instructional techniques is through coaching (Joyce and Showers, 1980, 1982).

In addition to the training of the literacy coordinator, the school leadership team participates in awareness sessions or a series of "team planning" sessions to increase their understanding of literacy learning and the dynamics of the project. In the process a new learning community comes into being. The leadership team learns to analyze the data documenting teaching/learning and work together toward a high quality implementation of the project, Figure 1. Throughout the project data are gathered, categorized, analyzed, and used to celebrate progress and provide direction for future change.

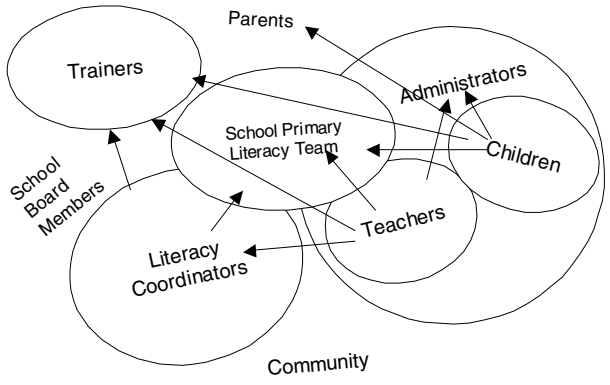

Figure 1. The use of data by members of a Literacy Collaborative learning community. Arrows indicate which members of the community are using which data. The cycle is repeated across multiple sites.

Research Design

A major goal of the Literacy Collaborative is to raise the level of literacy achievement of students in elementary schools. The focus since 1993 has been on literacy and language learning. The Literacy Collaborative research design institutes fall-fall data collection using a variety of reading and writing assessments, including both individual and group administrations. The purposes for collecting data on each child in Literacy Collaborative schools are to:

1. Inform classroom instruction by providing systematically collected information on each child's strengths and knowledge base;
2. Provide information enabling teachers to analyze the growth of individual students over time;
3. Provide a basis for school staff to analyze improvements of the project over time; and,
4. Inform the research and development of the Literacy Collaborative (See Table 1).

Results are provided to Literacy Collaborative schools each year, enabling school officials to evaluate student learning, curricula, and teaching methodology by examining trends over time.

Table 1.
Use of Data Within the Literacy Collaborative Training Model

User	Assessment	Purpose	Use to Evaluate
Teachers	Standardized Tests/ Assessments: Norm-referenced standardized test, HRSIW, Benchmark Books, Fluency and Write Name rubrics; Writing portfolio; Writing Vocabulary; Authentic & Performance assessments; Observation	Document learning; Match instruction to student; Evaluate teaching decisions;	Individual Students; Class
Literacy Coordinators	Observation; Standardized Tests	Match coaching to teachers' needs	Teachers
Principals	Standardized Tests; Demand for extra services; Retention rate; Classroom observation	Continue programs; Advise / reassign / support teachers	Programs; Literacy Coordinators; Teachers
Superintendents	Standardized Tests; State Proficiency Tests	Advise / reassign principals; Add staff	Programs; Principals
School Board	Standardized Tests; State Proficiency Tests	Advise/ reassign	Superintendent; Curricula
Community	State Proficiency Tests; Standardized Tests	Re-elect; Approve property taxes	School Board; Schools
Literacy Collaborative Trainers	Standardized Tests/ assessments Feedback	Revise/Change the training process;	Training model
	Observation	Match trainer's coaching to literacy coordinator's needs; Evaluate implementation	Literacy Coordinators; Implementation

The goal of data collection in the first two years of the project is to establish a baseline for the purpose of making historical comparisons. The literacy coordinator is in training during this first year and does not begin to train and coach classroom teachers until the second year of the project. School wide change does not begin until the second year (although there is informal sharing and a few days of introductory in-service may take place). Children in the school participate in the existing instructional program during this first year. During the second year, classroom teachers gradually phase in the new approaches. Thus, fall testing in the first two years of the project forms a baseline for subsequent years.

A cohort consists of a "grade level" group of children. Teachers in the Literacy Collaborative look at each cohort of children and their achievement scores. Recognizing that the cohorts are made up of different groups of children, their goal is to look for trends over time, asking, "Are we achieving higher scores, over time, as each new cohort of children experiences our educational program?" Each year the literacy coordinator and school planning team analyze their data to prepare a report that describes the school program, goals accomplished during the year, student outcomes, and identify goals for the next year. The Literacy Collaborative requires that the reading and writing data be collected from every student in kindergarten, grade one, and grade two for the primary project. Many schools collect additional data to inform their instruction and program design.

Sample

For this article, schools were selected based on the following criteria:

1. The school has been a Literacy Collaborative school at least four years making it possible to examine results over time.
2. The school is implementing the model.
3. Implementation of the project has not been significantly interrupted. The literacy coordinator has been at the school since the beginning of his/her training. He/she has not taken a leave of absence, transferred, or resigned during this time. This literacy coordinator has been at the school 4 or more years.

Results/Findings

Yearly data collection not only provides important information for individual Literacy Collaborative schools, but also creates a database for analyzing trends across schools over time, allowing for a critical review of the training processes at the school, district, and university levels. For purposes of this article, one major question will be addressed:

Research Question

What are the patterns of change in second graders' performance on the Gates-MacGinitie Reading Test (4th Edition) for schools that have been in the Literacy Collaborative network for at least four years?

To address this research question, two analyses will be examined. The first of the analyses will review results from Literacy Collaborative Research Reports, comparing the percentage of schools demonstrating an increase, a decrease, or no change in average NCE[2] performance from their initial baseline year to their fourth or fifth year in the project, as well as the aggregate average NCE gains for groups of schools in each of the reports. The second analysis will present average NCE results for children who remained in the same school from kindergarten to grade two with children who have not attended the same school from kindergarten to grade two.

Results from Literacy Collaborative Research Reports. Over the last few years there have been an increasing percentage of schools with improving standardized test results among schools that (1) have been in the Literacy Collaborative at least four years, (2) have had the same literacy coordinator for those four years, and (3) have been implementing the model (See Table 2.) (Williams, 1998; Williams and Pinnell, 1999; Williams, Scharer, and Pinnell, 2000; Scharer, Williams, and Pinnell, 2001). As shown in Table 2, the percentage of schools showing an increase in NCE gains has gone from 58% in the 1999 report to 78% in the 2001 report, while the percentage of schools with no gain or decreasing gains from baseline to their fourth or fifth year went from a high of 29 percent in the 2000 report to 16 percent in the 2001 report (Williams, 1998; Williams and Pinnell, 1999; Williams, Scharer, and Pinnell, 2000; Scharer, Williams, and Pinnell, 2001).

Table 2.
Percentage of Schools Demonstrating Increasing, Decreasing, or No Change in Standardized Test Results in Annual Research Reports

Research Report	Percentage of Schools Demonstrating			Number of Schools
	Increasing NCE Gains	Decreasing NCE Gains	No Change	
1998	**---**	**---**	**---**	**5***
1999	**58%**	**25%**	**17%**	**12**
2000	**61%**	**29%**	**11%**	**38**
2001	**78%**	**16%**	**6%**	**51**

**Note:* Due to the small number of schools no attempt was made to generalize results regarding percentage of schools showing an increase, decrease, or no change in standardized test results. The first year for administration of the Gates-MacGinitie Reading Test was fall 1995.

In addition, aggregate results for the group of schools in each of the Research Reports show a trend of continuing improvement for second graders on reading achievement. The Gates-MacGinitie Reading Test of Total Reading for the schools in the 1998 Research Report[3] rose on average from 35.70 NCEs in fall 1995 (n=221) to 43.31 NCEs in fall 1997 (n=236); the aggregate Total Reading results for schools in the 1999 Research Report[4] rose on average from 33.34 NCEs in fall 1995 (n=302) to 39.91 NCEs in fall 1998 (n=798); aggregate results from the 2000 Research Report rose from 37.28 NCEs in fall 1995 (n=203) to 43.43 NCEs in fall 1999 (n=2472); while the aggregate average NCE results for all second grade cohorts from schools in the 2001 Research Report on Total Reading increased from 36.00 in fall 1996 (n=999) to 48.70 NCEs in fall 2000 (n= 3493). For the 2001 report, all Gates-MacGinitie Reading Test (4th Edition) results from Fall 2000 were equated to the 3rd Edition for ease of comparison purposes, unless otherwise noted.

Average NCE Performance of Children With Consistency of Instruction and Attendance from Kindergarten to Grade Two. A critical concern in many schools is that of student mobility. Students new to the schools receive only

partial exposure to new instructional methods. To determine whether consistency in instruction and attendance would make a difference in student achievement, students who were in the same school from kindergarten to second grade were compared with cohorts of students who did not attend the same school from kindergarten to second grade.

For comparisons using mobility and attendance as group characteristics while controlling for student performance on the *Hearing Sounds In Words Task* (Clay, 1993), results for all second grade students in the fall of the fourth year as a Literacy Collaborative school for each group of schools are shown in Table 3. When the average performance of students who were at the same school from kindergarten to second grade with the performance of students who were not in the same school during that entire period of time were compared, the average NCE performance was much higher for the former group. This pattern was consistent across both groups of students who attended the same school from kindergarten to second grade—those who were absent less than 20 days during the prior school year and those who were absent more than 20 days during the prior school year—when compared with students with similar attendance records who did not attend the school from kindergarten to second grade. Students who stayed in the same school and were absent less than 20 days earned the highest scores across the three classes (1996, 1997, and 1998). **More specifically, the students who were in the same school from kindergarten to second grade and were absent less than 20 days during the previous school year outperformed the other three groups (42.32 NCEs in 1998 on Total Reading; 46.67 NCEs in 1999; 51.52 NCEs in Fall 2000). It should be noted that the performance for this group of students in Fall 2000 is at or above the 50.0th NCE, which is where students are expected to be for their grade level. Students in all other groups showed similar increasing trends, however no other group had the average performance at or above where they were expected to be for grade level**. Similar results were found for Reading Comprehension. Results for these groups of students indicate that attendance and consistency of research-based practices do make a difference. This pattern of achievement became stronger as the training of literacy coordinators and classroom teachers improved.

What Has Been Learned from the Data?

The data show that the student results, in the aggregate, are getting stronger across time. This is demonstrated in both Tables 2 and 3; scores for even the lowest group in Table 3 improved over time. Without data it is possible that the shift may have occurred in an undesired direction and the schools would not have known this had happened. During this time the following changes occurred as a result of having data available to guide actions by teachers, literacy coordinators, school administrators, trainers, and project developers.

At Ossipee Central School in NH, children at the end of kindergarten are tested using Clay's *Observation Survey* to determine who will receive additional services through their Title I program as first graders. When they first became a Literacy Collaborative School in 1996, 62% of the children qualified for Title I services at the end of kindergarten by scoring 96 points or less out of a possible 161 points. As the kindergarten teachers have implemented the Literacy Collaborative framework, the number of children who qualify for Title I services as first graders has decreased each year. During spring testing 1999, only 36% of the kindergarten children qualified for Title I services. The staff attributes this decrease in the number of students moving into first grade requiring Title I services to increased achievement during the kindergarten year as a result of implementation of the Literacy Collaborative framework" (p. 25, Williams, Scharer, and Pinnell, 2000).

Table 3.

Average NCE Performance on the Gates MacGinitie Reading Test for Second Grade Cohorts for Groups of Schools

Gates-MacGinitie Reading Test	Grade 2 Students	Attendance	Fall 1998 Results for 1996 Group of Schools			Fall 1999 Results for 1997 Group of Schools			Fall 2000 Results for 1998 Group of Schools		
			Mean	Std Dev	n	Mean	Std Dev	n	Mean	Std Dev	n
Total Reading	Not in Same School for K-2	Absent Less Than 20 Days Prior Year	39.22	22.14	95	42.40	22.76	355	48.60	NA	352
		Absent 20 or More Day Prior Year	29.75	15.94	8	28.13	24.00	47	47.30	NA	29
	In the Same School for K-2	Absent Less Than 20 Days Prior Year	42.32	21.20	273	46.67	21.87	1148	51.52	NA	1180
		Absent 20 or More Day Prior Year	14.13	16.92	15	36.80	17.51	96	42.70	NA	47

Project developers learned that it is imperative for the Literacy Team at the school to go through Team Training. It was noticed that schools that had **not** gone through Team Training oftentimes had standardized test results that were decreasing, rather than increasing. After the first few years in existence, it was found that without this component, oftentimes the teachers and/or administration did not totally understand what they were "getting into," whether they misunderstood such things as, but not limited to, training, instructional components, the time commitment, or data collection and evaluation. Often these schools had implementation issues/concerns, such as teachers who had not made a total commitment, or staff at school(s) that had **not** really understood what they had committed to. Innovations simply were not making it into these classrooms in these schools. Some teachers were fearful of change; others were making only superficial attempts to implement the research-based practices.

At the district level administrators at times must determine why the aggregate scores are decreasing. District administrators from one district were looking at the results for several buildings and began to realize from the data that in some of their schools there were too many classes/teachers/students in the building for one literacy coordinator to be able to make an impact. The literacy coordinator's time was spread too thin. The literacy coordinator must have enough time to coach teachers on a regular basis such that each teacher is coached for approximately 2 hours during a month. If this does not happen, teacher learning/change does not take place and in turn student learning does not occur to the desired extent.

At the university level in 1998, university trainers noticed that in many schools, students were not reading fluently and comprehension scores were not as high as they had hoped. There had to be better instruction on teaching comprehension. According to the NAEP study (Pinnell, et. al., 1995) there is a high correlation between fluent reading and comprehension as measured on standardized tests. Therefore trainers saw the need to emphasize the importance of teaching for phrased, fluent reading as a way to increase comprehension scores on standardized tests. More time was spent teaching literacy coordinators:

- How to rate fluency using the rubric in Fountas and Pinnell, 1996, p.81;
- To include a statement regarding fluency as part of the running record;
- How to teach for phrased, fluent reading across the framework for literacy lessons; and
- How to teach for comprehension strategies across the framework for literacy lessons, especially during interactive read aloud, shared reading, and guided reading lessons.

Similar changes were made in the training of spelling, phonics, and writing. Again discussions developed around what needed to be done during training to bring about shifts in learning (both teacher and student).

In summary, the following are some changes that were made at a variety of levels in response to the extensive examination of the data.

- Administration of the standardized test during both baseline years;
- Addition of team planning to broaden and stimulate ownership at the building level;
- Modification of training to provide multiple techniques for stronger classroom management;
- Increased emphasis placed on coaching skills for literacy coordinators and time to coach;
- Increased emphasis on explicit teaching of strategies for comprehending, for example, teaching of phrased, fluent reading; and
- Increased emphasis on phonics and spelling.

When asked to describe the effects of the Literacy Collaborative on the Mather School in Boston, Massachusetts, the principal, Kim Marshall, replied:

> The Literacy Collaborative took the Mather School's lower grades by storm. As principal, I had never seen a program so quickly win over virtually every teacher. … The program is now the instructional framework in all our classrooms from Kindergarten through Grade 3, and we are poised to begin the intermediate training next year.

The first and most important impact of the program has been on student learning. We are seeing achievement in reading and writing the likes of which we had never seen before, especially in kindergarten. Our first Literacy Collaborative cohort has not yet hit the important Massachusetts Comprehensive Assessment System (MCAS) tests in fourth grade, but we know from classroom assessments and anecdotal teacher accounts that our students are reading and writing at much higher levels than previous years.

The second impact has been on teacher collegiality and communication. Because there is now a common framework, a common language about instruction, and a common set of criteria for judging achievement, communication among teachers happens at a higher and more constructive level. Within grade-level teams and between grades, teachers are constantly comparing notes on students' progress and sharing effective strategies.

A third impact has been a much higher level of accountability. Now that we know where every student is, and now that we have a proven set of classroom experiences that can reach all students, failure is less and less an acceptable option. Without much administrative pressure, teachers are pushing themselves harder to get their students up to the demanding grade-level goals we have set for ourselves.

A fourth impact has been on our belief in our efficacy as a school. For years, we have had slogans like "All Chil-

dren Can Learn," but as Uri Treisman said in a recent speech, high expectations don't mean a thing unless they are accompanied by a solid program to teach all students. With the Literacy Collaborative, we have acquired that set of tools to bring all students up to 21st century standards.

In short, nothing in my 30 years in public education has come close to the impact of this program on teaching and learning. It has given us the teaching tools, the assessments, and the professional sharing to truly reach all our students" (pp. 21-22, Williams, Scharer, and Pinnell, 2000).

Conclusion

It may be necessary for researchers to retool/update their skills in newer data analysis techniques which are now available for analyzing longitudinal data. More specifically, these include quantitative methods for addressing longitudinal data, i.e., being able to use mixed effect models for interval data and generalized estimating equations (GEE) when repeated data are binary (Horton, and Lipsitz, 1999). Without such tools it may not be possible to examine the data effectively. It was through the analysis and examination of the data by multiple constituents that this project has been able to obtain desired results.

Studies by Hay/McBer, 2000 (cited in Fullan, 2001, p. 135) and the Educational Commission of the States (2000) provide further support for the findings presented regarding K-2 students in Literacy Collaborative schools who maintained consistency in instruction and attendance. Each of these projects reinforces the importance of collecting data to support/document program effectiveness within comprehensive reform models.

But teachers cannot do it alone. It really does take a community of learners. Fullan and Hargreave (1996), note "… in a world of growing complexity and rapid change, if we are to bring about significant improvements in teaching and learning within our schools, we must forge strong, open, and interactive connections with communities beyond them" (p. xii). These connections are strengthened by our ability to supply these communities with data on the effectiveness of their efforts at improving teaching and learning.

Fullan and Hargreaves (1996) maintain,

> that the challenge of interactive professionalism is the challenge of continuous school improvement. It is a process that leads in turn to gains in student achievement. No one working in and with our schools should evade this challenge. It is a challenge that involves us all, one in which we can all take positive action, even in the most apparently unsympathetic and unsupportive environments" (p.xi).

And in order to ensure that improvement is occurring across time, **all** parties involved must **utilize** the data on a regular basis whether evaluating the effectiveness of school programs or the impact of teaching/learning in the classroom.

Footnotes

[1] Please note this paper is NOT intended to sell this project but the project is used to illustrate the power of data utilization in bringing about positive systemic school change. It has been through examination of data that questions arose when attempting to find out why results were different than would be expected.

[2] A NCE is a statistical transformation of percentile ranks in which reading achievement is divided into 99 equal units with a mean of 50 and a standard deviation of 21.06. NCEs are generally considered to provide the truest indication of student growth in achievement since they provide comparative information in equal units of measurement. A NCE score of 50 is equal to the mean (average) score for the general population, which indicates where a student is expected to be for his/her grade level. Consequently, a NCE score of 60 is above the average. For a student's NCE score to remain the same at posttest as at pretest does not denote a lack of absolute progress. On the contrary, it means that the student has maintained the same relative position in terms of the general population. Even a small gain in NCEs indicates advancement from the student's original level of achievement.

[3] Schools in the 1998 Research Report had only 3 years of Gates-MacGinitie Reading Test results since fall 1995 was the first time the test was administered.

[4] The majority of schools in the 1999 Research Report only had 3 years of Gates-MacGinitie Reading Test results, but had 4 years of data on other measures. The 1996 LC-Training Class did not administer the Gates-MacGinitie Reading Test in the fall of their training year (Fall 1995).

References

Clay, M. M. (1993). *An observation survey of early literacy achievement.* Portsmouth, NH: Heinemann.

Darling-Hammond, L. 1993. Reframing the school reform agenda: Developing capacity for school transformation. *Phi Delta Kappa*, *74*(10), 752-761.

Diaz, M. (2001). Will reform based on standards and assessment make a difference in the 21st century? *Mid-Western Educational Researcher, 14*(1), 22-27.

Education Commission of the States, (2000). *In pursuit of quality teaching.* Denver: CO.

Fullan, M., and Hargreave, A. (1996). *What's worth fighting for in your school?* New York, NY: Teachers College Press.

Fullan, M. (2001). *The new meaning of educational change* (3rd edition). New York, NY: Teachers College Press.

Horton, N. J., and Lipsitz, S. R. (1999). Review of software to fit generalized estimating equation regression models. *The American Statistician, 53*, 160-169.

MacGinitie, W. H., and MacGinitie, R. K. (2000). *Gates-MacGinitie Reading Test* (4th Edition). Chicago, IL: The Riverside Publishing Company.

Hay / McBer, (2000). *Research into teacher effectiveness.* Report prepared for the Department for Education and Employment, London.

Joyce, B., and Showers, B. (1980). Improving inservice training: The message of research. *Educational Leadership, 37*, 379-385.

Joyce, B., and Showers, B. (1982). The coaching of teaching. *Educational Leadership, 40*, 4-10.

McCarrier, A. (2001). Teaching for phrasing and fluency: Connections to comprehension. In Pinnell, G.S. and Scharer, P.L. (Eds.). *Extending our reach: Teaching for comprehension in reading, grades K-2.* Columbus, OH: The Ohio State University.

Fountas, I. C., and Pinnell, G. S. (1996). *Guided Reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

Pinnell, G. S., Pikulski, J. J., Wixson, K. K., Campbell, J. R., Gough, R. B., and Beatty, A. S. (1995). *Listening to children read aloud: Data from NAEP's Integrated Reading Performance Record (IRPR) at grade 4.* Report No. 23-FR-04. Prepared by Educational Testing Service under contract with the National Center for Educational Statistics, Office of Educational Research and Improvement, U.S. Department of Education.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., and Kleiner, A. (2000). *Schools that learn.* New York: Doubleday.

Scharer, P., Williams, E. J., and Pinnell, G. S. (2001). *Literacy Collaborative 2001 Research Report.* Columbus, OH: The Ohio State University.

Williams, E. J. (1998). *Literacy Collaborative 1998 Research Report.* Columbus, OH: The Ohio State University.

Williams, E. J., and Pinnell, G. S. (1999). *Literacy Collaborative 1999 Research Report.* Columbus, OH: The Ohio State University.

Williams, E. J., Scharer, P., and Pinnell, G. S. (2000). *Literacy Collaborative 2000 Research Report.* Columbus, OH: The Ohio State University.