



PERGAMON

Teaching and Teacher Education 18 (2002) 969–987

TEACHING
AND TEACHER
EDUCATION

www.elsevier.com/locate/tate

Professional development: a key to Kentucky's educational reform effort[☆]

Hilda Borko*, Rebekah Elliott, Kay Uchiyama

School of Education, University of Colorado, Campus Box 249, Boulder, CO 80309-0249, USA

Received 28 August 2000; received in revised form 7 August 2001; accepted 22 October 2001

Abstract

Despite its essential role in educational reform, professional development typically does not receive adequate support in systemic reform efforts. This article presents an exception—a state that incorporated professional development as a central priority in its reform effort and four schools that used state resources to build their capacity for enacting the reform agenda. We describe central features of Kentucky's approach to professional development, characterize elements of professional development within the four schools, and discuss how these elements promoted three dimensions of school capacity: individual teachers' knowledge, skills, and dispositions; professional community; and program coherence. Based on this "image of the possible," we offer recommendations for professional development that supports systemic, standards-based educational reform.

© 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Professional development; Systemic reform; Standards-based educational reform; Case study

[☆]This research is part of a larger project, The Effects of Standards-Based Assessments on Schools and Classrooms, conducted through the National Center for Research on Evaluation, Standards, and Student Testing (CRESST). The work reported herein was supported, in part, under the Educational Research and Development Centers Program, PR/Award Number R305B60002, as administered by the Office of Educational Research and Improvement, US Department of Education. The findings and opinions expressed in this report do not reflect the positions or policies of CRESST, the Office of Educational Research and Improvement, or the US Department of Education. An earlier version of this paper was presented at the annual meeting of the American Educational Research Association, Montreal, April 1999.

*Corresponding author. Tel.: +1-303-492-8399; fax: +1-303-492-7090.

E-mail addresses: hilda.borko@colorado.edu (H. Borko), joriott@earthlink.net (R. Elliott), mary.uchiyama@colorado.edu (K. Uchiyama).

In his introduction to the first issue of *Journal of Educational Change*, a new international journal dedicated to describing educational change and investigating its causes and consequences, Hargreaves (2000) argued that "across the world, educational reform is itself a huge priority" (p. 1). Fullan's (2000) lead article in the same journal noted that "We are in the midst of the second serious attempt at large-scale educational reform in the past half-century" (p. 5) and outlined a number of factors necessary for large-scale reform to be established and sustained. Among these factors are an integrated system of pressure (e.g., accountability) and support (e.g., professional development), and an infrastructure that includes units responsible for both assessment and accountability, and professional development and

assistance. Professional development is essential to individual teachers' growth as well as organizational change in schools, both of which are necessary for true educational reform to occur. Yet, at least in the United States, systemic reform efforts typically provide inadequate support for teachers' professional development (Sykes, 1996).

This article presents a contrasting case—a state that made professional development a major component of its standards-based reform effort from its inception, and four exemplary schools that used the professional development resources provided by the state to enact the mandated reform agenda. This “image of the possible” (Shulman, 1983) provides insights about how professional development can be used to promote systemic educational change through enhancing three dimensions of school capacity: individual teachers' knowledge, skills, and dispositions; professional community; and program coherence (Newmann, King, & Youngs, 2000).

1. The key role of professional development in educational reform

1.1. *The teacher's role in educational reform*

The new visions of learning and teaching that underlie current educational reform efforts in the United States are making profound demands on schools, teachers, and students. Teachers are expected to help students develop rich understandings of important content, think critically, construct and solve problems, synthesize information, express themselves proficiently, and demonstrate these understandings and skills on new types of assessments. Classrooms are to be places where teachers and students engage in rich discourse about important ideas and participate in problem-solving activities grounded in meaningful contexts (e.g., National Council of Teachers of Mathematics, 1989, 2000; National Education Goals Panel, 1991; National Research Council, 1993).

These visions depart significantly from much of the educational practice that is found in today's typical American school. Further, as Wilson and colleagues have pointed out,

[T]he teaching and learning envisioned in these reforms is not something that most of us know how to do or even know enough to want. If we already wanted this kind of learning—and if we knew how to teach in such ways—more classrooms would look like the ones envisioned by reformers.... Moreover, these reforms are visions, not programs for practice. They are sketches of what teaching and learning could be. They are images and ideals, not realities. Schoolpeople must construct practice from these sketches, and they must promote new goals and means to meet those goals, even as they seek to develop alternative visions of what the reforms really mean. (Wilson, Peterson, Ball, & Cohen, 1996, p. 469)

Because the new standards and frameworks driving reform efforts do not provide specific guidelines for teaching, “The burden of adding to, filling out, and revising the visions is left to the teachers. We can see that most teachers would have to learn an enormous amount to make the reforms workable” (Wilson et al., 1996, p. 475). To make matters even more challenging, the changes required to achieve these visions are not a simple matter of learning new teaching strategies that someone else has developed. For teachers to move successfully toward these visions requires, in many cases, major changes in their knowledge and beliefs, as well as their instructional practices (Putnam & Borko, 1997).

Yet, if educational reform efforts are to succeed, it is imperative that teachers meet these challenges. Although policy makers certainly are crucial to reform, “teachers are the key agents when it comes to changing classroom practice. They are the final policy brokers” (Spillane, 1999, p. 144). Little (1999) explained,

Long-term observers of educational innovation and school reform have argued that reform might more productively be seen as a problem of learning than as a problem of “implementation.” That is, the progress of reform appears to rest in crucial ways on the capacity of teachers, both individually and collectively. (p. 2)

Little's view is echoed by Fullan and Hargreaves (1992), who concluded, based on the empirical investigations of educational change in Canada, England, and the US reported in their edited book, that teacher development is central to successful change.

1.2. The importance and the inadequacy of professional development

These transformations, and the learning that they require, are not likely to occur without support and guidance (Putnam & Borko, 1997, 2000). Thus, the success of current reform efforts is dependent upon creating opportunities for teachers' continual learning and providing sufficient professional development resources to support these opportunities (Cohen & Ball, 1990; Darling-Hammond, 1990, 1996; Richardson, 1994; Sykes, 1996). McDonnell (1994) focused explicitly on the need for professional development related to the new forms of assessment that are frequently a component of reform efforts:

Because many new forms of assessment require that teachers play a key role in their design, administration, scoring, and use, these assessments will not work as intended unless adequate training is provided. The need for major new investments in professional development is even greater for those assessment policies that are expected to change curriculum and instructional policies. (p. 414)

At the same time, educational scholars have noted the inadequacy of existing support for teacher learning. Darling-Hammond (1990) suggested a possible reason for this situation—that policy makers appear not to realize the central role that teachers play in determining the success of reform efforts:

In general, educational policy in this country has started from the assumption that what teachers know and think is of little consequence for the course of teaching—that teaching can be controlled by prescriptions for practice embodied in texts, tests, and monitoring schemes.

The teacher is viewed as a conduit for instructional policy, but not as an actor. As a consequence of this view, policy makers have tended to invest a great deal more in the creation of control systems for teaching than they do in the development of teacher knowledge. ...investments in staff development are paltry compared to those that occur in other professions or businesses. (p. 239)

Compounding the problem, the resources that have been spent on professional development over the years often have not yielded positive results. Most in-service activities for teachers are one-time events rather than on-going learning experiences. These activities tend to be “intellectually superficial, disconnected from deep issues of curriculum and learning, fragmented, and non-cumulative” (Cohen & Ball, 1999, p. 15). Topics are determined by people other than those for whom the activities are intended. And the programs are not designed to take into account what we know about how teachers learn (Putnam & Borko, 1997). Thus, it is not surprising that, as Fullan (1991) observed, “Nothing has promised so much and has been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when teachers returned to their classrooms” (p. 315).

In his article introducing a special section of *Phi Delta Kappan* devoted to Professional Development and School Reform, Sykes (1996) made two observations that capture both the need for professional development and the inadequacy of conventional professional development to meet the demands of current educational reform. First, “teacher learning must be at the heart of any effort to improve education in our society. While other reforms may be needed, better learning for more children ultimately relies on teachers.” Second, “conventional professional development [is] sorely inadequate.... The resources devoted to professional development...are too meager and their deployment too ineffective to matter.” Sykes concluded, “These twin observations form the most serious unsolved problem for policy and practice in American education today.... [E]fforts to promote

teacher learning that will lead to improved practice on a wide scale have yet to emerge” (p. 465).

2. Professional development for individual and school capacity

To foster systemic reform, professional development must support change at both individual and school levels. As Fullan (1991) explained, “Continuous development of all teachers is the cornerstone for meaning, improvement, and reform. Professional development and school development are inextricably linked” (p. 315). Professional development serves two complementary purposes in efforts to reform schools. It is “both a strategy for *specific, instructional change*, and a strategy for *basic organizational change* in the way teachers work and learn together” (p. 319; emphasis in the original). Also supporting an approach focused on both the individual and the institution, Newmann and colleagues claimed that “professional development is more likely to advance achievement of all students in a school if it addresses not only the learning of individual teachers, but also other dimensions of the organizational capacity of the school” (Newmann et al., 2000, p. 2). To serve these two purposes, professional development must be responsive to the interests and needs of both individual teachers and the collective or group (Little, 1993).

Newmann and colleagues developed a framework for studying professional development that takes into account both the individual and the collective (King & Newmann, 2000; Newmann et al., 2000; Youngs, 2001). They defined school capacity as “the collective power of the full staff to improve student achievement school wide” (Newmann et al., 2000, p. 3) and identified five dimensions of this concept. First, school capacity includes the *knowledge, skills, and dispositions of individual teachers*. In order to advance student achievement, school staff must be competent in instructional and assessment approaches that are appropriate to their students, and they must hold

high expectations for all students’ learning. Second, school capacity includes the idea of *professional community*. A strong school-wide professional community consists of four features: a shared set of goals for student learning, staff collaboration and collective responsibility to achieve the shared goals, reflective professional inquiry to address the challenges they face, and opportunities for the staff to influence the school’s activities and policies. Third, school capacity includes *program coherence*. Capacity is enhanced to the extent that instructional programs are coherent, focused on clear school goals, and sustained over time. Fourth, to increase student achievement, schools must have *technical resources* such as high quality curricula, instructional materials, assessment instruments, computers, laboratory equipment, and adequate facilities. Finally, effective *principal leadership* is a critical factor in a school’s capacity to educate its students.

Newmann and colleagues argued that three of these dimensions—teachers’ knowledge, skills, and dispositions; professional community; and program coherence—are most responsive to improvement through professional development and should be central to a school’s professional development efforts. (Technical resources and principal leadership, while equally important to building capacity, are typically addressed primarily through means other than professional development.) Their study of professional development in urban elementary schools across the United States focused on these three dimensions. Working with a criterion-based sample of nine schools that served large proportions of low-income students, showed progress in student achievement, and attributed that progress to school-wide, sustained professional development, they found that these schools were able to organize professional development to address school capacity comprehensively, and that they attended to multiple dimensions of school capacity through diverse approaches to professional development. The extent to which district policy supported building capacity depended on interactions between the individual schools and their policy contexts (Youngs, 2000). Considering the

relationship between policy support and capacity, they concluded:

[P]olicy support does matter, but in order to know what kind of support will most serve comprehensive professional development, one must first understand the school context. This suggests that some district and state policies should be tailored to fit particular school contexts rather than supporting a standard policy for all schools. (Newmann et al., 2000, p. 37)

Youngs (2000) elaborated on this idea, recommending that to help schools enhance capacity, districts should provide some instructional guidance through centralized policies and processes related to professional development and school improvement, while also promoting school level autonomy.

In examining the role of professional development in Kentucky's reform efforts, we also focus on schools as the unit of analysis. We adopt the position supported by Fullan (1991), Little (1993), and Newmann et al., (2000) that professional development must address both individual teachers and the professional community as a whole in order to successfully promote school-wide student achievement. We describe the professional development resources available to Kentucky schools through the Kentucky Education Reform Act (KERA) and the ways in which four exemplary schools used these resources to enhance teachers' knowledge, skills, and dispositions; professional community; and program coherence. We also consider how Kentucky's policies related to professional development, with their emphasis on both centralized and decentralized approaches, enabled these schools to use state resources to address their particular needs. This work extends Young's (2000) analysis of connections between district policy and school capacity to the state level.

3. Methods

This research is part of a larger project, *The Effects of Standards-Based Assessments on*

Schools and Classrooms, which examined the impact of Kentucky's educational reform on school and classroom practices. The larger project included both survey and exemplary case study components. This article focuses on the case study component and on professional development practices at four exemplary schools (for an analysis of how these four schools met the challenges of the Kentucky reform, see Wolf, Borko, Elliott, and McIver (2000); for survey results on the effects of Kentucky's reform on classroom practices see Stecher, Barron, Kaganoff, and Goodwin (1998) and Stecher and Barron (1999)).

3.1. Site selection and sample

Gage (1978), Shulman (1983), and others have argued convincingly for the value of case studies as existence proofs, providing images of what can be accomplished rather than documenting what is typically the case. Specifically,

One major virtue of a case study is its ability to evoke images of the possible....It is often the goal of policy to pursue the possible, not only to support the probable or frequent. The well-crafted case instantiates the possible, not only documenting that it can be done, but also laying out at least one detailed example of how it was organized, developed, and pursued. For the practitioner concerned with process, the operational detail of case studies can be more helpful than the more confidently generalizable virtue of a quantitative analysis of many cases. (Shulman, 1983, p. 495)

Despite the wisdom of this argument, it is difficult to find case studies of successful educational reform efforts. As Hatch (1998) noted, "Stories about successful and sustained school improvement are rare, but the tales of unrealized expectations and failure in reform efforts are legion" (p. 4). In the case study component of our project, we set out to help fill this void by identifying and studying success stories—schools in which, according to Kentucky educators, "good things were happening," particularly with respect to the reform movement.

We used a multi-step sampling procedure recommended by Heath and McLaughlin (1993) to select the schools featured in the exemplary case study component of the project. We began by seeking advice from people familiar with Kentucky's educational reform agenda and its enactment in schools throughout the state. These people included Kentucky Department of Education (KDE) personnel, regional service center directors, district personnel, and university faculty members. When talking with these people, we explained that we were looking for schools that they considered successful, not necessarily because of high test scores, but because they were enacting school and classroom practices promoted by KERA. Further, we did not want "no wonder" schools—for example, schools located in high socioeconomic communities or magnet schools for the gifted that would invite comments like, "No wonder they can do it. Look at their population and resources." Rather, we wanted to select schools with diverse populations of students, where we would have to look deeper than surface explanations for their success.

We generated a list of schools whose names came up repeatedly during these conversations. Members of the research team then made site visits to these schools during which we informally interviewed principals and teachers, and observed classroom mathematics and writing instruction. Our final sample of six schools—three elementary schools and three middle schools, one each in urban, suburban, and rural areas of Kentucky—was selected on the basis of these site visits. In this article, we focus on the urban and rural sites.

The two rural sites—Bluejay Elementary School and Eagleview Middle School—are located in Eastern Kentucky. The data on free and reduced lunch, 80% at Bluejay and 70% at Eagleview, indicate the high poverty in this remote rural area of the state. The two urban sites—Eastend Elementary School and Mt. Vernon Middle School—are more economically diverse, with approximately 25–30% of their children on free and reduced lunch. Also, as is typical of urban areas within the state, these schools have more racially and ethnically diverse populations than

the two rural schools. (For additional information on the site selection process, see Wolf et al., 2000.)

3.2. *Data collection*

Data collection for the exemplary case study component of the project consisted primarily of 2-day visits to each school in Spring 1997, Fall 1997, and Spring 1998. To gather information on professional development, we conducted extensive semi-structured interviews with the principals and targeted teachers in the accountability grades (grades 4 and 7 for writing, grades 5 and 8 for mathematics), as well as other school, district, and regional personnel whose names surfaced as key informants about the topic (e.g., the Professional Staff Assistant at Eastend, the mathematics department chair at Mt. Vernon, regional resource teachers). A member of the research team attended a KDE-sponsored portfolio training workshop in Fall 1997, where she participated in professional development activities while taking observational notes. We collected artifacts related to professional development during all data collection activities including our initial trip to the Kentucky Department of Education and selected regional resource centers, the three data collection visits to each school, and the portfolio training workshop. We also kept journals of our reflections related to the project's research questions, each day in the field.

All interviews were audiotaped and transcribed. Observational notes taken during the portfolio training workshop were expanded into detailed field notes immediately after leaving the site.

3.3. *Data analysis*

We developed an initial coding scheme for professional development by drawing upon our knowledge of professional development policies and practices within the state and modified it inductively based on a preliminary analysis of interview data. Coding categories for the teacher interviews, for example, included participation in KDE-organized professional development,

leadership roles in KDE-organized professional development, participation in assessment-related activities such as benchmarking and scoring of portfolios, participation and leadership in building-level professional development, knowledge and beliefs about professional development, and a “wish list” of desired professional development activities. We developed similar coding schemes for our interviews with principals and other key personnel. We used coded interview data and artifacts collected on site to develop focused case studies of professional development at each of the schools. We analyzed these case studies to identify patterns and themes across the schools. These analyses were supplemented with information from the portfolio training workshop and interviews with KDE and regional personnel.

In our presentation of results, words in quotation marks indicate direct comments by our participants, either audio-recorded during interviews or taken down verbatim in our observations. Words in brackets are our own; they serve to add clarification to participants’ remarks. Quotes are marked by a letter to identify the role of the participant (P = principal, AP = other school administrator (e.g., Professional Staff Assistant), T = teacher, A = administrator from the district, region, or state), the year the quote was collected, and a final letter to indicate the data collection cycle (F = fall, S = spring). For example, a quote from a teacher interview conducted in the spring of 1997 would be marked T97S.

4. Professional development and the Kentucky educational reform effort

Kentucky was one of the first states to mount a statewide, standards-based educational reform effort, with passage of KERA in 1990. Motivated by a 1989 Kentucky Supreme Court decision (*Rose v. Council for Better Education, Inc.*), which declared the state’s public school system unconstitutional because of the number of children receiving an inadequate education, KERA’s central commitment was to the improvement of student learning. The

legislation was designed to change the state’s entire educational system through reforms in educational finance, governance and curriculum. Changes in the area of curriculum were to include the adoption of new curriculum standards, standards-based assessment, and instructional practices.

Professional development was a major component of Kentucky’s reform effort from its inception. Kentucky Revised Statutes (KRS) 156-095, which went into effect for the 1990–1991 academic year, mandated that the State Board for Elementary and Secondary Education establish, direct, and maintain a statewide program of professional development to improve instruction in the public schools. This statute specified that the State Board for Elementary and Secondary Education provide annual training programs for local school district professional development coordinators and a series of state-sponsored professional development activities for certified personnel throughout the Commonwealth. KRS 158-070 mandated that each local board of education use 4 days of the minimum school term for professional development and planning activities for the professional staff, without the presence of pupils. In 1992, HB 596 amended this statute to allow school districts to use up to 5 days or 30 h for professional development, provided that (a) the local boards determine the number of days to be used and designate them in the school calendar, and (b) a plan for use of these days be developed by each school and approved by the district superintendent (Daniel & Craig, 1996). In addition KDE, charged with implementing KERA, allocated substantial resources to supporting teacher change and designed an extensive professional development program to help educators meet the demands and expectations of the reform agenda. The Kentucky Instructional Results Information System (KIRIS), the statewide assessment system, was to be KDE’s primary tool for holding schools accountable for student learning outcomes. And, the multi-faceted professional development program was a central component of its efforts to help schools and teachers achieve the reform goals. Thus, the state reform initiative included both

pressure and support—two factors that Fullan (2000) identified as necessary to the success of large-scale reform.

Boston (1996) characterized the dramatic shift in state support for professional development associated with KERA as follows:

In pre-reform Kentucky, professional development was the neglected step-child of public education. It encompassed just four days of in-service education a year; statewide funding for keeping teachers professionally up-to-date was limited prior to 1990s....Today, Kentucky professional development effort has changed from a centralized, state-dominated function to a decentralized model in which local needs dictate what happens. With KERA, funding has moved quickly from an initial \$1 per student (1990–1991) to \$23 per student (1995–1996). Overall spending on professional development has increased dramatically, from \$1.1 million in 1990–1991 to \$11.6 million in 1994–1995. (pp. 11–12)

Perhaps the biggest challenge that KDE confronted in providing professional development services, like other services associated with KERA, was geography. Many of Kentucky's school districts are located in remote rural areas, accessible only by mountain roads which are particularly treacherous during the winter months. To help reform efforts reach these districts, the Department established a system of nine regional service centers which provided a local source of professional development facilitators and resources for the various strands of KERA. These centers housed full-time "resource teachers" in mathematics and writing who offered workshops and school-based professional development on a wide range of topics such as mathematics problem solving and the writing process. Other center personnel provided services related to other aspects of KERA—including support for site-based management, primary education, and technology—to districts, schools, and individual teachers.

These regional centers, while an important starting point, were insufficient. As Edward J. Reidy Jr., former Deputy Commissioner of Edu-

cation, explained in an interview during our initial visit to Kentucky, "We have a real commitment that what kids learn should not be a function of geography....You could draw a circle around the regional service centers. Most of our schools that were audited (for concerns related to KIRIS scores) were outside those circles and most were poor" (A96F). To supplement the work of the centers, KDE developed a variety of activities and materials specifically designed to meet the emerging needs of teachers and schools as they worked to achieve KERA goals.

This article focuses on the curriculum strand within KERA, which included curriculum, instruction, and assessment. Specifically, we consider professional development designed to help teachers transform their instructional practices in order that their students learn the "core content" identified in Kentucky's new curriculum framework, and that their schools achieve their target KIRIS scores. We organize our discussion around the two major categories of services relevant to curriculum: school-based professional development and professional development for mathematics and writing portfolios.

4.1. School-based professional development

School-based activities constituted a major component of Kentucky's approach to professional development. KRS 156-095 initially defined consortia of school districts as the units that were to receive state professional development funds. This legislation mandated that all Kentucky school districts with enrollment of less than 20,000 students join consortia, and that these consortia submit professional development plans to KDE by June 30, 1991. Allocation of resources was dependent upon these plans.

In keeping with KERA's focus on school-based decision making, the 1994 legislature passed new legislation for professional development which provided that after July 1, 1995, school districts were able to withdraw from the consortia and to spend their professional development funds on activities of their choice. This new legislation allocated 65% of all state professional development funds directly to school councils, stipulating

that in order to receive these funds, each school must submit an annual plan for its professional development program. These plans were evaluated according to six standards: (a) a clear statement of school or district mission, (b) evidence of representation of all persons affected by the professional development plan, (c) evidence of application of needs assessment analysis, (d) professional development objectives focused on the school or district mission and derived from the needs assessment, (e) professional development program and implementation strategies designed to support school or district goals and objectives, and (f) a plan that incorporated a process for evaluating professional development experiences and improving professional development initiatives (Daniel & Craig, 1996).

The decentralized approach to allocation of resources reflected in this component of Kentucky's professional development program provided the opportunity for schools to build several dimensions of school capacity outlined by Newmann and colleagues (Newmann et al., 2000). Specifically, the standards used to evaluate professional development plans promoted professional community and program coherence by requiring that schools develop a set of shared goals (a mission related to student learning) and a professional development program to support those goals. Teachers' influence on professional development activities was ensured through the central role of the needs assessment.

4.2. Professional development for mathematics and writing portfolios

In addition to funds allocated directly to individual schools, KDE provided extensive professional development related to the preparation and scoring of KIRIS mathematics and writing portfolios. These portfolios were one of the most innovative components of KIRIS. Students in accountability grades created mathematics and writing portfolios during their ongoing instructional programs; teachers were responsible for overseeing student efforts and scoring the completed portfolios. To support this substantial assessment responsibility assigned to teachers, a

professional development program focused on student portfolios, with a separate budget, was created and administered by a Portfolio Management Team in the Division of Portfolio Initiatives within the Office of Assessment and Accountability.

During the years of KIRIS implementation, the Division of Portfolio Initiatives produced numerous documents designed to assist teachers in fulfilling their responsibilities related to portfolio development and scoring. In mathematics, for example, publications included a mathematics portfolio teacher's guide and annual updates (KDE, 1995a); booklets of sample portfolio tasks for the elementary, middle, and high school levels (KDE, 1997a, b, c); and pamphlets on selecting appropriate portfolio tasks, also at the elementary, middle, and high school levels (KDE, 1997d, e, f). In addition to these written materials, the Division produced a series of Kentucky Educational Television (KET) telecasts with associated videotapes on various aspects of portfolio production and scoring.

The Division of Portfolio Initiatives also provided face-to-face professional development for teachers across the Commonwealth, using a trainer-of-trainers model. To implement this model, the Portfolio Management Team worked closely with the regional resource teachers in mathematics and writing. In addition, they relied heavily on full-time classroom teachers. For both mathematics and writing portfolios, approximately 27 classroom teachers were identified to serve as "regional coordinators"—one at each educational level (elementary, middle, high) within each geographic region. Approximately 700 "cluster leaders" were directly supported by these regional coordinators and, in turn, provided support for teachers within their local districts.

Mathematics portfolio training sessions, held for all mathematics teachers in accountability grades in Fall and Spring of the 1997–1998 academic year, were one service made available through this trainer-of-trainers model. The KDE Mathematics Portfolio Program team, with the assistance of regional resource teachers, provided training sessions for the regional coordinators. The regional coordinators then provided parallel

training for all cluster leaders in their regions. Cluster leaders, in turn, were responsible for training all teachers whom they served. While school-based professional development fostered program coherence and professional community, portfolio-related professional development was designed to promote school capacity primarily through building the knowledge and skills of individual teachers.

4.3. *Professional development and school capacity*

Research on the overall effectiveness of Kentucky's professional development activities in building school capacity is mixed (Youngs, 2001). On the positive side, in Stecher and colleagues' 1996–1997 survey of teachers in the accountability grades, the majority of participants reported that they were influenced at least “a moderate amount” by the professional development they received in portfolio development and portfolio scoring. In the area of mathematics, more than half the respondents reported that *Transformations: Kentucky's Curriculum Framework* (KDE, 1995b, c) and *Core Content for Mathematics Assessment* (KDE, undated) had “a great deal of influence” on their instructional practices. Similarly, in the area of writing, over 50% of the teachers reported that the professional development activities in which they participated had a positive effect on their ability to teach writing (Stecher, et al., 1998).

In contrast, McDiarmid and Kelly (1997) found that most professional development activities in the schools that participated in their study were designed to help teachers prepare students for KIRIS. Only rarely did these activities “focus directly on teachers' understanding of the topics and procedures they were to help their students learn” (p. 16). Similarly, Guskey and Oldham (1997) noted that professional development programs in many schools throughout the state focused narrowly on the particular assessment formats and scoring procedures found in KIRIS. They attributed this limitation to the pressure for immediate improvement in test scores.

These mixed results help support the value of exemplary site case studies. The four case study

schools described in the next section provide concrete models of ways in which the professional development resources available in Kentucky could be used to build school capacity.

5. Professional development at four exemplary Kentucky schools

In this section we describe professional development practices at the four case study schools, focusing primarily on the two categories of services provided by the state. That is, we discuss the various ways in which the schools used KERA resources for school-based professional development, as well as their participation and leadership in the professional development for mathematics and writing portfolios. We also consider the extent to which the professional development activities addressed components of school capacity.

5.1. *School, team, and individual use of professional development resources*

All four case study schools had annual plans for their professional development programs that reflected the needs and interests of their faculties. Three of the schools—Eastend, Mt. Vernon, and Eagleview—had professional development committees that helped to determine how the four mandatory professional development days would be used and made on-going decisions about allocation of professional development funds. These committees solicited input from the staff to determine their needs and desires for professional development and made decisions accordingly. As Ms. Mitchell, the Professional Staff Assistant at Eastend, explained, their professional development:

has been pretty much on target. I think that is partly because the professional development committee is a pretty large committee, and they really try to get a lot of input and to do a good needs assessment of what the staff feel they need and want. Because professional development reflects what the staff determines that they need, most of the time it's been pretty beneficial. (AP98S)

Staff needs were also taken into account in determining professional development activities at Bluejay, although there was no committee assigned this role. Ms. Chief, the principal, was the catalyst for professional development. She explained, “I conduct a needs assessment each year to see what the faculty feel their needs are for professional development. And I offer them a long list of different professional development activities that could be conducted at our building” (P98S). Each year the list included her ideas as well as ideas from other staff members. Thus, although the schools used different methods for determining their professional development programs, all four solicited faculty input, thus providing opportunities for the teachers to influence the school’s activities and policies (one feature of the professional community dimension of school capacity).

The schools also differed in their allocation of resources to school, team and individual professional development activities. At one extreme, all four professional development days and most of the professional development money at Eastend were used for whole-school or team activities. In contrast, at Eagleview, one day was allocated to departments for curriculum work and one-half day was allocated to school-wide portfolio training; the other professional development time, and much of the professional development money, were distributed to individuals or groups of teachers on the basis of specific requests. Curriculum alignment and training for portfolio preparation and scoring were the only activities common across the four schools; other activities were tailored to the unique needs and interests of each school staff. In this section, we highlight some of the activities to which resources at the four schools were allocated.

5.1.1. School-based portfolio training

In keeping with KDE’s trainer-of-trainers model for KIRIS portfolios, the teachers at each school participated in mathematics and writing portfolio training sessions. These sessions—typically one-half day in fall and one-half day in spring—were offered by the schools’ cluster leaders and followed the format and content of training sessions provided by KDE’s Portfolio Management Team.

For example, the Fall 1997 mathematics workshops focused primarily on characteristics of appropriate portfolio tasks. Teachers viewed a videotape of the KET telecast produced and distributed by KDE entitled, “Mathematics Portfolio Fall Update for Teachers.” They discussed characteristics of appropriate portfolio tasks and categorized a set of tasks provided by KDE as either appropriate or inappropriate. In addition, teachers were introduced to the analytic scoring guide for portfolio tasks developed by KDE staff in conjunction with the Mathematics Portfolio Advisory Committee. The Spring 1998 mathematics workshops continued the focus on scoring of portfolio tasks. Participants practiced scoring several “anchor portfolio pieces” provided by KDE and discussed their results, in order to develop consistency in scoring across teachers. They also discussed ethics for appropriate testing practices.

Teachers and administrators had mixed reactions to the portfolio workshops, and particularly to the KET telecast videotapes. On the one hand, they understood the importance of consistency in these workshops across the state. On the other hand, several commented that the videotapes were “boring” and difficult to watch. The following comment by Ms. Mitchell captured these sentiments well:

I think that the required professional development workshops for intermediate teachers related to math portfolios and writing portfolios are helpful. They’re kind of boring because you really have to stick to the script and the agenda, cover certain topics and show certain videos, and do it exactly the way KDE wants it done. I understand that if we’re to develop this statewide, and people statewide are to understand the expectations, it has to be done....And I do think they teach you what the expectations are, how portfolios will be scored, and what they’re going to be looking for. (AP98S)

Thus, despite their complaints, teachers and administrators agreed that the workshops and accompanying materials (e.g., sample portfolio tasks, analytic scoring guides) helped ensure that

teachers developed the knowledge and skills to fulfill their instructional and assessment responsibilities related to student portfolios. These resources helped build the individual capacity necessary to successfully implement the portfolio component of the KERA reform.

5.1.2. Curriculum alignment

All four schools used some combination of professional development time and money to work on aligning their curricula with the KERA core content standards and developing instructional and assessment activities. Eastend's efforts were the most extensive. There, the school curriculum committee, chaired by Ms. Mitchell and composed of teachers representing each team and each subject area, worked to align one curriculum area each summer and to develop associated instructional materials and assessment tools. Ms. Conner, the principal, explained,

As a school we determined that curriculum is our major goal over the long haul. We've been working on it for quite a few years. We've concentrated on language arts, math, and then science. The next area of focus will be social studies. And we're still evaluating the curriculum as we're using it, to make adjustments and improvements. So I don't know that we'll ever get to a point where we say this is not an area of focus; it probably always will be. (P97F)

In summer 1996, for example, the committee revised the mathematics curriculum and developed a mathematics program that included instructional materials and pre- and post-tests for every core content area. As ideas for portfolio prompts and other activities came up during the realignment effort, they were recorded and compiled into big binders, one for each teacher at each grade level. Ms. Nicholl, a fourth/fifth grade teacher, commented on the value of these binders: "That way, you're not having to go out and find 25 things on your own. Everybody's kind of helping out." Ms. Roby, her teammate, added that as a result of these efforts, "We have a much tighter, more comprehensive math program" (T97S). This revamping of the school's mathematics program was

accompanied by substantial instructional changes in the class that Ms. Roby and Ms. Nicholl shared, with much more time devoted to problem solving and talking about mathematics, and less to computation.

Eastend used professional development money to provide summer stipends for teachers who served on the curriculum committee. In addition, the school used professional development time to share the committee's products with the rest of the staff. Ms. Mitchell explained,

We do some sort of in-house professional development whenever we do curriculum alignment, to introduce the staff to the newly aligned curriculum...and give them some time to think about it and organize it within their complexes [teams] or grade levels. We have them ask questions, provide a rationale for the curriculum committee's decisions, look at recommended instructional units, and those types of things. I think the meetings are beneficial. (AP98S)

Ms. Nicholl commented about this work:

We have spent the past six or seven years revamping the curriculum, aligning the curriculum....We see curriculum alignment as very valuable....That's where the changes are coming down.....The changes occur when you're looking at what you're presenting to children. (T97F)

Groups of teachers at Mt. Vernon and Bluejay also spent time in the summer working on curriculum alignment. For example, at Mt. Vernon discipline-based teams comprised of teachers from all grade levels went on 1-week summer retreats to work on curriculum alignment. Teams from different disciplines went each year. Mr. George, the principal, felt that these retreats brought his faculty closer together and promoted communication across grade levels. As he explained,

Three years ago, for example, the eighth grade social studies teachers probably wouldn't have known what the sixth grade teachers were

doing, or even cared. By bringing them together, they can see what's expected when kids enter our school and what skills are necessary by the time they exit. It helps them think more like a school and a department. (P97F)

Teachers at Mt. Vernon and Eagleview also received 1 day of professional development credit for working in subject matter teams to compile books of materials to support instruction on various types of KIRIS-related writing and mathematics tasks. Mr. Bass and his language arts colleagues at Eagleview organized their books of writing materials to correspond to the three types of KIRIS-related writing tasks that students needed to practice (on demand, open response, portfolio). Affectionately referring to these books as their “stuff books,” they spoke of their value as instructional resources. Working on these stuff books, like compiling binders and sharing materials at Eastend, and participating in summer retreats at Mt. Vernon, helped to promote collaboration and shared goals for student learning, two key features of professional community. Further, the curriculum alignment efforts enhanced the coherence of the schools' instructional programs.

5.1.3. *Mt. Vernon's Tuesday afternoon meetings*

Mt. Vernon used a substantial portion of its professional development resources for a unique form of school-level professional development. Teachers were paid to stay 1 h after school, once a week, to participate in school-wide professional development meetings. These meetings typically were run by Mr. George, with occasional leadership from other school personnel and external consultants. Mr. George guaranteed that the meetings would be no longer than 1 h. He maintained that “If you tell the teachers it's only going to last for one hour...then it's fine with them.... I felt like I've had all their attention and all their cooperation” (P97F).

Mr. George also promised that the meetings would focus on issues directly related to what teachers were doing in their classrooms. During the 1996–1997 academic year topics included

motivation and the “four-column method” (a pre-writing technique developed by resource teachers in the state as an approach to constructing answers to KIRIS open-response items). In 1997–1998 several sessions focused on KIRIS rubrics and scoring student work. Referring to these meetings, Mr. George explained,

Staff development in the school is ongoing. It doesn't happen four times a year. It happens weekly now, and sometimes it happens daily. I think if you want to stay an exemplary school, you have staff development that happens almost daily—working with the weak areas and strengthening the strong areas. (P97F)

In other words, you work on an on-going basis to enhance the knowledge and skills that teachers need in order to build the school's capacity to enact the reform agenda.

5.1.4. *Individual use of professional development resources*

Many of the professional development resources at Eagleview and Bluejay were allocated to meeting the needs and interests of individuals and small groups of teachers. Some of these resources were used to support independent professional development activities. Ms. Nelson, a mathematics teacher at Eagleview, explained,

We have a lot of flexible professional development. Toward the end of the year a couple of people from the board office do surveys and bring us information about trainings that might be useful to us, and we can select from those.... For example KET ran a middle school math series. If I want to just watch those tapes and summarize them, then I can do that for some of my flexible time. (T97F)

As one form of professional development, Ms. Chief taught demonstration lessons for the teachers at her school. In fall 1997 she sent out a memo asking if teachers wanted her to teach mini-lessons in their classes and providing a list of topics she could address such as persuasive writing, narrative writing, on-demand writing,

and answering open-response questions. Ms. Chief explained that during these lessons, “the teachers stay with me and they watch” (P97F). At the time of our visit she had already conducted three lessons and had two more scheduled.

Teachers at both schools also took advantage of external professional development opportunities that coincided with their interests. For example, Mr. Bass asked for and received support to attend a workshop on revision strategies conducted in Lexington by Barry Lane. The fourth grade teachers at Bluejay used professional development funds for the same workshop, and several other Bluejay teachers attended the Kentucky Council of Teachers of Mathematics (KCTM) conference.

Resources were also allocated to support the activities of small groups of teachers. Thus, Mr. Bass typically fulfilled most of his required professional development hours through work with other teachers on projects such as the stuff books. He appreciated the flexibility of a system that allowed teachers to keep most professional development activities in house and draw upon the expertise of their colleagues. As he explained,

Who knows us better than we know ourselves? I’m of the opinion that some of the greatest teachers in this state are in this county, and they’re doing a lot of neat things. And I think our system allows us to share those ideas with each other. (T97F)

In contrast to Bluejay and Eagleview, the teachers at Eastend and Mt. Vernon felt that they rarely had the time to take advantage of opportunities offered outside the school walls because there were so many school- and team-level professional development activities at their school. Ms. Roby explained,

With all the things that we’re required to do at the intermediate level, we’re already two and one-half days over the professional development limit. At some point you have to say, “I’ve had enough.” We don’t even sign up any more for the things we want to do. There’s just x number of hours in the day. (T98S)

When they did participate in outside professional development activities, teachers at all four

schools teacher were expected to share what they learned with their colleagues. Ms. Conner expressed this expectation well,

In general, staff members understand that when you go to a professional development activity, you must come back and share what you’ve learned with the rest of us so we can all benefit from it, if we’re using school funds to send you. There’s an understanding that “This may be something I’m interested in and I need, but I have an obligation to teach others.” So it’s a support both ways. (P97F)

Similarly, Mr. Bass noted that when Eagleview teachers went to professional development activities, “they [administrators] ask you to grab everything you can grab” to share with other teachers. Also, sometimes teachers “organized a presentation for the rest of the faculty” (T97F) based on what they had learned. Through such sharing of materials and ideas, individually-oriented professional development provided resources for in-house professional development and helped to build the sense of professional community within the school.

5.2. Leadership in portfolio initiative trainer-of-trainer activities

Teachers from all four schools who were participants in our study played some type of leadership role in the Division of Portfolio Initiatives trainer-of-trainer activities. Ms. Chief was a regional coordinator in writing and served on KDE’s Writing Portfolio Advisory Committee. Ms. Roby and Mr. Perry were regional coordinators in mathematics and served on the Mathematics Portfolio Advisory Committee. Mr. Taylor also served on the Mathematics Portfolio Advisory Committee, and Ms. Crabtree participated in summer workshops on the re-scoring of writing portfolios.

As regional coordinators, Ms. Roby, Mr. Perry and Ms. Chief participated in the portfolio training workshops provided by the Division of Portfolio Initiatives and, in turn, provided training to cluster leaders in their regions. They were also

available to cluster leaders and all teachers in their regions when questions about any aspects of portfolio development or scoring arose. In fact, these instructional leaders considered themselves responsible “for keeping the rest of the county up to date as far as what the changes are, what the new standards are for math [and writing] portfolios” and for “making sure that quality training goes on in our district” (Ms. Roby, T97F).

These teachers chose to participate in leadership roles, in part, so that they could provide the most up-to-date information about KERA and KIRIS to their schools. As Ms. Chief explained,

When I go to these meetings, I get back and I get information out to the teachers immediately. I run it off immediately. It’s hot off the press. We get to use it fast, which is great compared to the time it takes to go through the channels and get to other teachers. (P97F)

From the beginning of KERA, Ms. Roby and Ms. Nicholl adopted the attitude that they should “jump in there and get as high up on that ladder as we can...to get the information first and to help our building.” For the good of the school, “You’ve got to get out there. You’ve got to figure it out” (Ms. Roby, T97S).

They also appreciated the fact that by working at this level, they had input into state-level decisions about KIRIS testing. Ms. Chief observed that on the Writing Portfolio Advisory Committee,

We get to make some really important decisions pertaining to writing. If there are modifications that need to be made on the holistic scoring guide or anything like that, we are the people who get to have some input, to help with it as a committee. Kentucky teachers are actually getting to help with that. They’re getting to help compose it, to make changes in it when changes need to be made. (P97F)

Teachers on the Mathematics Portfolio Advisory Committee also had the opportunity to provide input into policy decisions. One of their tasks was to “set up the structure for the R&D phases of the math portfolio project” (Ms. Roby,

T97F). Then, during R&D, they helped “to figure out what we want the new portfolios for Kentucky to look like” (Mr. Taylor, T97F). In addition, the Committee was convened in summer 1997 to try out several different options for scoring portfolios and to develop a recommendation for a revised scoring plan. Ms. Roby described the summer math scoring experience as

unbelievable. We were looking at several different options—scoring things holistically as a whole folder, scoring things piece by piece holistically, or scoring things analytically....That was tough. It was really tough....Basically what came out is that we are going to be scoring analytically piece by piece. (T97F)

The workshops were also learning experiences for the teachers. Mr. Taylor reflected,

When you start making decisions [about scoring] as a large group, then it starts affecting and changing what you’re doing in your classroom. That’s why I consider it professional development—because anything you go to that affects the way that you teach, or the way that you look at something, is benefitting you, which is what I think professional development should be. (T97F)

Thus, in addition to providing information that helped the schools improve their writing and mathematics programs, these leadership experiences enhanced participating teachers’ knowledge and skills and gave them the opportunity to influence state decisions about KERA and KIRIS.

6. Professional development and school capacity revisited

All four schools developed extensive professional development programs to suit the specific needs of their teachers and students, as well as to enhance their instructional programs in areas related to KERA. Although these programs differed with respect to characteristics such as their relative emphasis on individual, team, and whole-school activities, all four addressed the three

dimensions of school capacity identified by Newmann and colleagues as most susceptible to improvement through professional development.

Portfolio workshops and materials provided by KDE were designed to enhance the *knowledge, skills, and dispositions* of individual teachers across the state. These resources played a key role in ensuring teachers' competence to guide students' portfolio preparation and to score the completed portfolios. As the mathematics cluster leader at Mt. Vernon explained, explicit guidelines for the structure of portfolios and sample portfolio tasks helped her to understand "what's appropriate and what's inappropriate" and to see how she could use portfolio tasks for instructional as well as assessment purposes. The trainer-of-trainers model also served its intended purpose at the case study schools. When interviewed prior to Mt. Vernon's Fall 1997 mathematics portfolio workshop, the cluster leader described her plans,

We'll be talking about how the scoring has changed, how portfolio development has changed, and what's expected. We'll go through the samples just the way they went through them with me....So, basically the state trains me and I turn around and train my teachers in exactly the same way. (T97F)

Some of the schools used their discretionary professional development money to provide opportunities for individual teachers to enhance their knowledge and skills in other KERA-related areas, through participation in activities of their choice such as the Barry Lane writing workshop and KCTM conference.

With respect to *program coherence*, KERA provided a set of common goals for student learning. Districts and schools were charged with ensuring that all students achieve these goals, and they were expected to make any changes in curriculum and instruction necessary to fulfill that responsibility. The learning goals, outlined in *Kentucky's Learning Goals and Academic Expectations* (KDE, 1994) and *Transformations: Kentucky's Curriculum Framework* (KDE, 1995b, c), guided the curriculum alignment efforts at all four case study schools. These efforts, supported by

professional development resources, resulted in instructional programs that were coordinated across grade levels, and that the schools intended to sustain over time.

Learning from one's colleagues was an explicit characteristic of each school's approach to professional development and an indication of their strong sense of *professional community*. Mr. Push, the principal at Eagleview, explained, "Our own people train us. We don't have to get people we don't know to come here and train us. We train ourselves." When asked about the advantages of this approach he responded, "I think there's more respect. You know an idea is working because you can go upstairs and see it, or you can go downstairs and see it. The teachers are doing it. They're living it" (P97F). Ms. Chief made a similar comment about professional development at Bluejay,

To be honest with you, for the past two or three years we've done our own professional development. If there is something that we need specifically and we want to invite someone in, we do it....But a lot of it, the great majority of it, we've done ourselves and it's come from things that we need. (P98S)

This approach to in-house professional development, combined with the expectation that teachers share with their colleagues what they learned at external professional development activities, helped to promote staff collaboration and collective responsibility for achieving KERA-related student learning goals.

The four schools' strong commitment to professional development and belief in the importance of ongoing support for teacher learning were undoubtedly as important for building school capacity as specific program features. Each school had professional development in place prior to KERA and was able to use the additional resources provided by the state reform initiative to enhance and extend its existing programs. Teachers at each school served in professional development leadership roles within the state and saw these experiences as ultimately benefitting their school, their students, and their colleagues, as well as supporting their own professional growth. Ms. Chief

described the commitment to teacher learning at Bluejay:

We don't just have professional development on professional development days. There are some times when we stay as a faculty during the evenings and have professional development, even though it's not expected of us. If there's something out there that we need, we stay. (P97S)

Ms. Conner expressed very similar sentiments:

I think the most important thing we've done is to get really good teachers who can train staff on how to implement KERA.... I have people who have been willing to work long hours, evenings, Saturdays, whatever, to determine how we can do this and then train my staff on how to do it. And I think the key to all of it is training. You cannot expect people to go into classrooms and change their behavior without having the training and the understanding of what it is we're trying to do. (P97S)

Their statements are reminiscent of Mr. George's comment, quoted earlier in the article, about the importance of ongoing staff development "if you want to stay an exemplary school" (P97F).

7. Conclusions

These descriptions of professional development at Bluejay, Eagleview, Eastend, and Mt. Vernon provide images of the possible—concrete examples of how four exemplary schools used the resources available in Kentucky to organize and develop professional development programs to build school capacity. As Shulman (1983) suggested, these case studies can be helpful to practitioners concerned with the process of designing and enacting professional development to promote systemic reform. They also can be helpful to policy makers as an existence proof that Kentucky's approach to professional development under KERA provided the resources needed to support systemic educational reform, and that schools committed to "doing what's best for

children" (Ms. Conner, P97S) could utilize those resources in ways that enhanced their capacity to enact the reform agenda.

To support these claims, we return to the two issues that Sykes (1996) identified as "framing contemporary concern for professional development of teachers" (p. 465). His first observation was that "teacher learning must be at the heart of any effort to improve education in our society" (p. 465). Kentucky's reform agenda clearly met this criterion. As McDiarmid (1995) concluded in his report of a study commissioned by KDE to analyze the state's professional development resources and offer recommendations for change, "Professional development is not just another dimension of Kentucky's education program. It is the lynch pin. Without it, the vision of new learning for all students cannot be realized" (p. 23).

Sykes's (1996) second observation was that "resources devoted to professional development...are too meager and their deployment too ineffective to matter" (p. 465). Here, KERA provided a counterexample. The resources allocated to professional development were substantial. Of equal importance, the multi-faceted approach to professional development enabled schools to address multiple reform goals in an efficient, effective manner. The Division of Portfolio Initiatives' trainer-of-trainers model worked to ensure that key elements of the reform agenda reached teachers and students in all corners of the state. In addition, allocation of 65% of the state professional development funds directly to school councils enabled each individual school to tailor activities to its specific needs and priorities.

This is not to say that Kentucky's approach to professional development under KERA was flawless. On the contrary, teachers in our study reported concerns about some elements such as the videotapes of KET telecasts and the highly structured nature of portfolio training workshops. And, as indicated earlier in the article, research on the effectiveness of the approach is mixed (Youngs, 2001). However, KDE continued to question its approach to professional development and seek ways to improve it. At the time an earlier version of this article was prepared for

presentation at the 1999 Annual Meeting of the American Educational Research Association, we found the following statement of professional development goals, provided by the Department of Professional Development, posted on the KDE web site:

For educators to continue making progress in implementing KERA requires rethinking how professional development is designed and how it leads to instructional improvement. The focus will need to shift from workshops and procedures to on-the-job learning and curriculum content. The architects of KERA recognized that reform is a long-term undertaking and that professional development is essential to successful implementation. Shifting the emphasis of professional development to more school-based activities and creating more opportunities for teachers to deepen their curriculum content knowledge similarly requires long-term commitment and attention. (www.kde.state.ky.us, March 25, 1999).

With its allocation of resources to both centralized and decentralized professional development and its commitment to continuous improvement, Kentucky provides a model for designing professional development that can support statewide, standards-based educational reform. The four schools featured in this article provide examples of how this support can be used to enact effective, site-specific professional development programs. In addition, they provide strong support for the claims of educational scholars such as Fullan (1991), Little (1993), and Newmann and colleagues (Newmann et al., 2000; King & Newmann, 2000; Youngs, 2001) regarding the importance of designing professional development to meet both individual and institutional needs.

Acknowledgements

We would like to thank other members of the research team—Shelby Wolf, Monette McIver, Brian Stecher, and Sheila Barron—and our colleague Dominic Peressini, for their comments

on the paper. We extend special thanks to principals and teachers at the four schools that are featured in the paper. Without their support, this project would not have been possible.

References

- Boston, B. (1996). *From dilemma to opportunity: A report on education reform 5 years after the Kentucky Education Reform Act of 1990*, Vol. II. Lexington, KY: The Partnership for Kentucky School Reform.
- Cohen, D. K., & Ball, D. L. (1990). Relations between policy and practice: A commentary. *Educational Evaluation and Policy Analysis*, 12, 330–338.
- Cohen, D. K., & Ball, D. L. (1999). *Instruction, capacity, and improvement*. CPRE Research Report No. RR-043. Consortium for Policy Research in Education, University of Pennsylvania, Philadelphia, PA.
- Daniel, P. L., & Craig, J. F. (1996). Professional development. In The Kentucky Institute for Education Research (KIER), *A review of research on the Kentucky Education Reform Act 1995* (pp. 167–180). Kentucky: KIER.
- Darling-Hammond, L. (1990). Instructional policy into practice: “The power of the bottom over the top”. *Educational Evaluation and Policy Analysis*, 12, 233–241.
- Darling-Hammond, L. (1996). What matters most: A competent teacher for every child. *Phi Delta Kappan*, 78, 193–200.
- Fullan, M. G. (1991). *The new meaning of educational change*. New York: Teachers College Press.
- Fullan, M. G. (2000). The return of large-scale reform. *Journal of Educational Change*, 1, 5–28.
- Fullan, M. G., & Hargreaves, A. (1992). Teacher development and educational change. In M. Fullan, & A. Hargreaves (Eds.), *Teacher development and educational change* (pp. 1–9). London: The Falmer Press.
- Gage, N. L. (1978). *The scientific basis of the art of teaching*. New York: Teachers College Press.
- Guskey, T. R., & Oldham, B. R. (1997). Despite the best intentions: Inconsistencies among components in Kentucky’s systemic reform. *Educational Policy*, 11, 426–442.
- Hargreaves, A. (2000). Editor-in-Chief’s introduction representing educational change. *Journal of Educational Change*, 1, 1–3.
- Hatch, T. (1998). The differences in theory that matter in the practice of school improvement. *American Educational Research Journal*, 35, 3–31.
- Heath, S. B., & McLaughlin, M. W. (1993). *Identity and inner-city youth: Beyond ethnicity and gender*. New York: Teachers College Press.
- Kentucky Department of Education (KDE) (1994). *Kentucky’s learning goals and academic expectations*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1995a). *Kentucky mathematics portfolio teacher’s guide 1995–96 updates*. Frankfort: Author.

- Kentucky Department of Education (KDE) (1995b). *Transformations: Kentucky's curriculum framework*, Vol. I. Frankfort: Author.
- Kentucky Department of Education (KDE) (1995c). *Transformations: Kentucky's curriculum framework*, Vol. II. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997a). *Kentucky mathematics portfolio elementary sample tasks booklet*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997b). *Kentucky mathematics portfolio high school sample tasks booklet*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997c). *Kentucky mathematics portfolio middle school sample tasks booklet*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997d). *Selecting appropriate tasks for the elementary KIRIS mathematics portfolio*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997e). *Selecting appropriate tasks for the middle school KIRIS mathematics portfolio*. Frankfort: Author.
- Kentucky Department of Education (KDE) (1997f). *Selecting appropriate tasks for the high school KIRIS mathematics portfolio*. Frankfort: Author.
- Kentucky Department of Education (KDE), undated. *Core content for mathematics assessment*. Frankfort: Author.
- King, M. B., & Newmann, F. M. (2000). Will teacher learning advance school goals? *Phi Delta Kappan*, 81, 576–580.
- Little, J. W. (1993). Teachers' professional development in a climate of educational reform. *Educational Evaluation and Policy Analysis*, 15, 129–151.
- Little, J. W. (1999). *Teachers' professional development in the context of high school reform: Findings from a three-year study of restructuring schools*. Paper presented at the annual meeting of the American Educational Research Association, Montreal.
- McDiarmid, G. W. (1995). *Realizing new learning for all students: A framework for the professional development of Kentucky teachers*. NCRTL Special Report, National Center for Research on Teacher Learning, Michigan State University.
- McDiarmid, G. W., & Kelly, P. P. (1997). *Teachers planning professional development in a reform context: The case of Kentucky*. Paper presented at the annual meeting of the American Educational Research Association, Chicago.
- McDonnell, L. M. (1994). Assessment policy as persuasion and regulation. *American Journal of Education*, 102, 394–420.
- National Council of Teachers of Mathematics (1989). *Curriculum and evaluation standards for school mathematics*. Reston, VA: Author.
- National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA: Author.
- National Education Goals Panel (1991). *The national education goals report: Building a nation of learners*. Washington, DC: Author.
- National Research Council (1993). *National science education standards: An enhanced sampler. A working paper of the National Committee on Science Education Standards and Assessment*. Washington, DC: Author.
- Newmann, F. M., King, M. B., & Youngs, P. (2000). *Professional development that addresses school capacity: Lessons from urban elementary schools*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.
- Putnam, R., & Borko, H. (1997). Teacher learning: Implications of new views of cognition. In B.J. Biddle, T.L. Good, & I.F. Goodson (Eds.), *The international handbook of teachers and teaching* (pp. 1223–1296). Dordrecht, The Netherlands: Kluwer.
- Putnam, R., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teaching? *Educational Researcher*, 29(1), 4–15.
- Richardson, V. (Ed.) (1994). *Teacher change and the staff development process: A case of reading instruction*. New York: Teachers College Press.
- Shulman, L. S. (1983). Autonomy and obligation: The remote control of teaching. In L.S. Shulman, & G. Sykes (Eds.), *Handbook of teaching and policy* (pp. 484–504). New York: Longman.
- Spillane, J. P. (1999). External reform initiatives and teachers' efforts to reconstruct practice: The mediating role of teachers' zones of enactment. *Journal of Curriculum Studies*, 31, 143–175.
- Stecher, B. M., & Barron, S. (1999). *Quadrennial milepost accountability testing in Kentucky*. CSE Technical Report 505. Center for Research on Evaluation, Standards, and Student Testing, University of California, Los Angeles.
- Stecher, B. M., Barron, S., Kaganoff, T., & Goodwin, J. (1998). *The effects of standards-based assessment on classroom practices: Results of the 1996–97 RAND survey of Kentucky teachers of mathematics and writing*. CSE Technical Report 482. Center for Research on Evaluation, Standards, and Student Testing, University of California, Los Angeles.
- Sykes, G. (1996). Reform of and as professional development. *Phi Delta Kappan*, 77, 465–467.
- Wilson, S. M., Peterson, P. L., Ball, D. L., & Cohen, D. K. (1996). Learning by all. *Phi Delta Kappan*, 77, 468–476.
- Wolf, S. A., Borko, H., Elliott, R., & McIver, M. (2000). That dog won't hunt!: Exemplary school change efforts within the Kentucky reform. *American Educational Research Journal*, 37, 349–393.
- Youngs, P. (2000). *Connections between district policy related to professional development and school capacity in urban elementary schools*. Madison, WI: Wisconsin Center for Education Research.
- Youngs, P. (2001). District and state policy influences on professional development and school capacity. *Educational Policy*, 15, 278–301.