Professional Development & Class Size Reduction:
Complementary Resources Looking for Connections

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Policies are always choices among relative goods. In discussions about improving student achievement, two options often contrasted are reducing class size and improving teacher quality. Which is the better investment? Those who advocate smaller class sizes point to the empirical record of achievement effects (Biddle & Berliner, 2002; Blatchford, 2003; Ehrenberg, Brewer, Gamoran, & Willms, 2001; Finn & Achilles, 1990) while those supporting teacher quality note that investments in teacher quality is a more effective intervention (Hanushek, 2003).

A number of researchers have suggested that it is nonsensical to pit these two ideas against one another, that to activate the investment in smaller classes, teachers must change their practice to leverage the power of a smaller group. This assumption has been difficult to translate into practice because CSR programs have not often included a staff development component that would help teachers change the way they teach. The need for professional development is especially important because teachers tend to mirror the pedagogy that they have experienced. Because most teachers were educated or have practiced with larger groups of students, their own practice in a CSR context might be more backward than forward looking.

What types of support do teachers and administrators need to take full advantage of class size reduction initiatives? And how are more general needs for development played out in local contexts of reform? I examine these questions in this paper. I begin by examining the literature related to professional development in general, focus on how professional development has been addressed in the class size reduction literature, then move on to present data from a study in which professional development was linked to class size reduction in a multidimensional reform.

Literature review

To be effective, professional development must provide teachers with a way to directly apply what they learn to their teaching. Research shows that professional development leads to better instruction and improved student learning when it connects to the curriculum materials that teachers use, the district and state academic standards that guide their work, and the assessment and accountability measures that evaluate their success (American Educational Research Association, 2005).

Recent reform proposals have premised improvement in student achievement on clear statements of high standards, increased accountability and improved teacher quality. Recognizing that investment in staff is a basic requirement of this process; the role of professional development in

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the ultimate support of student achievement has received increased scrutiny. Attempts to define high quality professional development have defined their structural and substantive features (Garet, Porter, Desimone, Birman, & Yoon, 2001). Structural features describe the general design of PD and include the *form, duration,* and degree of *collective participation of groups of teachers.* Substantive features include *content focus,* degree of *active learning,* and degree of *coherence* in the PD program. Garet et al found that the combination of these factors produce the most powerful professional development effects. In their analysis of the Eisenhower Professional Development Program, Garet et al noted that high quality professional development was ongoing, intense, delivered to groups of teachers in a relevant unit (school, grade level, team), focused on specific content rather than general strategies, it engaged teachers as active learners, and it added to a coherent system of staff development. Further, high quality professional development is supported by districts through standards and assessment alignment, continuous improvement practices, and teacher involvement in the planning process (Desimone, Porter, Birman, Garet, & Yoon, 2002). These systemic approaches to professional development provide a supportive synergy that connects professional development activities to the goals and instructional practices in particular schools and it locates staff growth within relevant social networks.

Professional development needs in class size reduction initiatives

> The important question may not be what smaller classes should look like, but why they so often look just like larger classes. While reduced class size is a structural condition that can create possible interactions that support student growth, ways in which teachers can accomplish this are not intuitive. To make substantial changes in teacher practice, teachers must have opportunities to learn about and develop these practices in high-quality professional development and in regular and sustained dialogue with colleagues. (Evertson, 2000)

The proposed mechanisms at work in class size reduction are that smaller classes provide opportunities for more positive teacher-student interactions, fewer behavioral disruptions and more effort for teaching and learning. With smaller groups, teachers are able to do more assessment, which makes instruction more relevant to a particular group of students. Further, smaller groups make it possible for teachers to form closer, more personal relationships with students and their families. Students have more opportunities to learn the local cultural rules of schooling and to develop the dispositions related to success. In these positive contexts, teacher morale and student affiliation with school are higher, creating a recursive cycle of success for both teacher and student (Graue, Hatch, Rao, & Oen, 2005). This complex set of mechanisms require equally complex attention to teacher action. How do we help teachers develop these new strategies?

Researchers have recognized the importance of teacher quality in class size reduction initiatives, but it has been hard to illustrate empirically. The Tennessee STAR study, a randomized experiment comparing regular and small classes in grades K-3, included a teacher training component for 57 teachers prior to assignment to experimental or control group. The three day program focused on active learning for first graders (including thematic teaching, use of manipulatives, and interactive instructional strategies) (Achilles, Kiser-Kling, & Own, 1995). When trained teachers were compared to their untrained counterparts, researchers found no difference (Mosteller, 1995). From this, many interpreted that professional development made little difference in CSR implementation. Surveys of Wisconsin SAGE teachers found that the

implementation of the professional development portion of the program was variably successful with the majority of teachers surveyed (Molnar, Wilson, Allen, & Foster, 2002). An analysis of principal practice in SAGE schools identified proactive approaches to building teacher capacity that linked professional development activities to the structure of CSR and compared it to a sink or swim approach in which teachers were left to their own devices to learn new teaching strategies (Burch & Theoharis, 2005). Finally, the California class size reduction program, a universal implementation for grades K-3, resulted in severe shortages of qualified teachers, limiting the effectiveness of the program (Stecher, Bohrnstedt, Kirst, McRobbie, & Williams, 2001). From the California implementation, researchers suggest that CSR investments focus on ongoing professional development with a focus on literacy instructional strategies for a diverse student population, prevention strategies, and systemic induction of new teachers (McRobbie, 1996). Across time the practices and suggestions for professional development come to mirror the elements of high quality programs suggested by Garet et al, with more ongoing comprehensive programs focused on particular content.

Conceptual framework

The work in this project takes a contextually based perspective on the implementation of class size reduction. Following Blatchford (2003), I believe that

> [I]t is not likely, or realistic, to think that one theory or conceptual framework will account for effects. Class size effects are, in other words, *not singular but multiple.* Accordingly, we shall need multiple theoretical or conceptual frameworks to account for these effects and to judge their implications, such as those connected to teaching, pupil attentiveness and social relations. Further, the different effects may have conflicting outcomes . . .and different effects can themselves affect each other (p. 157-8).

Given the complexity of CSR, we needed to employ multiple theoretical and conceptual frameworks to judge its efficacy. With no discernable direct paths of influence between the size of a class and student outcomes, it is vitally important to recognize the importance of context. One way to do that is to approach both class size reduction and professional development as resources that are relatively inert until they are activated in a particular local context (Cohen, Raudenbush, & Ball, 2000). Within that situation the unique combination of histories, goals, valued outcomes, and social networks come together to catalyze the potential power within the resources. From this perspective, it is recognized that the mutual effects of class size reduction and professional development come together in schools and classrooms in locally specific ways, reflecting the shared conceptions of achievement, the roles of educators and students, and the structural opportunities and constraints available.

This is particularly important in the case of Wisconsin's SAGE program, which in theory, is much more than a CSR initiative. SAGE is a multi-dimensional reform that links multiple contexts and stakeholders for school improvement. In addition to reducing class size to 15 students per teacher, SAGE requires school to provide rigorous curriculum, professional development and evaluation for teachers, and strengthen the links between home and school by making the school available to the community for more than the typical school day. The framing of this reform is based on the assumption that 1) to be most effective, smaller classes must enact content rich instruction, 2) teachers require support to learn strategies for working with smaller groups, and 3) that families provide important instructional contexts that schools should support through partnership and resource development. Given Wisconsin's status as a local control state,

there is much flexibility for districts and schools in SAGE implementation. This increases even further the necessity to examine *how* SAGE resources are used in locally specific ways if we are to understand how student outcomes are produced.

Methods

This paper comes out of a large-scale evaluation of Wisconsin's Student Achievement Guarantee for Education (SAGE), a multidimensional reform aimed at improving achievement outcomes for students living in poverty. Each year the Department of Public Instruction supports an evaluation of the program, and the focus for the 2004-5 school year was a study of local implementation. Our work involved instrumental case studies of practice in nine high poverty schools in urban, semi-urban, and rural communities. We chose schools with a range of student performance on third and fourth grade tests and within those schools we asked the principal to nominate a kindergarten, first grade, and a second or third grade teacher who represented the teaching practices of the school. The characteristics of the schools[2] are presented in Tables 1.

Table 1 about here

We designed our data collection to describe instructional practice, organizational strategies, and social context related to the mechanisms that produce student achievement in SAGE classrooms. While the classroom is the central focus of our work, we also recognize its location in nested contexts. The project also explored the links between what happens in the classroom and other relevant factors of school life (administrative decision-making, physical space constraints, etc). Given professional development's central position in SAGE's four elements, we came to the project with an interest in how schools implement PD related to SAGE and we became even more interested as we did our fieldwork. Our analysis for this paper relies on a subset of data collected for the project, including:

- Eight half-day visits to each classroom during the 2004–05 school year for observations of all educational activities detailing the physical environments, instructional activities, and interactions
- Collection of artifacts (e.g., lesson plans, curriculum, examples of home-school communication, report cards, assessment instruments, photographs)
- Interviews with classroom teachers (2) and principals (3)

Data Analysis

Our analysis followed generally accepted forms of qualitative inquiry, with both inductive and deductive components (Erickson, 1986; Graue & Walsh, 1997). Supported by the qualitative research software NVivo, analysis focused within and across schools. Data from the diverse sources were read and re-read, examined through the assumptions that guided the evaluation design and for specific patterns that emerged through fieldwork. Given the purposeful sampling used in the design and the multiple types of data collected, the case studies and cross-case analysis provide triangulated inferences based on multiple sources and interpretive strategies. This type of analysis provides the appropriate foundation for transferability (Guba & Lincoln, 1989) from the specifics of local practice to other sites and experiences because it is richly

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[2] All names for districts, schools, and participants are pseudonyms.

descriptive and comparative. The case studies provide rich information on how, and for whom, SAGE works.

SAGE-specific Professional Development

The SAGE legislation is unique in its specific attention to professional development. The segment on professional development has five distinct aspects: transition programs for newly hired employees, planning/collaboration time, submission and review of teacher and administrator professional development plans that focus on improvement of student achievement, and establishment of staff evaluation process focused on improvement of performance (Wisconsin Department of Public Instruction, 2005). The rationale for this provision is included in the SAGE program guidelines, highlighting the intention that SAGE is part of a system of practice focused on improving student achievement.

> The intent of these provisions is to ensure that the professional development programming in a school or district is clearly and directly linked to the academic achievement and other goals that the district has for student performance. Ideally the evaluation of **all** professional staff persons should include some consideration of the degree to which pupils in the SAGE classrooms achieve school, district and, as appropriate, state academic standards. If, over time, significant numbers of pupils in a particular classroom or in a particular school consistently do not meet the objectives the school and district should review staffing and instructional practices and other factors, and make specific plans for improvement. In such instances the professional development plans for professional staff members in these buildings should include steps these individuals will take, including additional training, to bring about improved achievement and should specify the support to be provided by the school and district. (p. 8)

While the literature on CSR has consistently called for staff development focused on strategies that make the most of working smaller groups, the SAGE guidelines take a more generic approach, linking professional development to broader efforts to address student achievement. The documentation of school implementation of the PD portion of SAGE indicate that that all schools complied with all elements of the legislation. This official story was at odds with the lived experiences of participants in very interesting ways.

We asked both teachers and principals about the role that professional development played in their implementation of the SAGE program. The general approach taken by the SAGE requirements was mirrored in their responses, with diverse PD activities provided by district and school. The most striking theme in our conversations was the lack of attention to the specific practices called for by the SAGE program beyond a focus on curriculum content. Few could point out particular professional development related to SAGE (one participant vaguely remembered a workshop of co teaching and another had used visitation time to observe in a team taught SAGE classroom). There was a sense that it might have occurred earlier in the history of the program, perhaps for the pilot school staffs but that since SAGE had become more mainstream, everyone assumed that teachers and administrators knew how to do SAGE. When asked whether the district had played a role in SAGE implementation, Ms. Stratton, a learning coordinator at Gallows, told us that:

> I think that there are a lot of things that the district could have done when SAGE was first put into the building to prepare teachers. It sounds funny – how to handle 15 kids instead of 30. But if you're teaching a classroom of 15 kids the same way you would have taught a classroom of 30 kids, what's the point of 15 kids? We weren't given any in-servicing. We weren't given anything to build on.

This was a popular sentiment among participants who felt more or less plunked into a reduce sized class without transitional or substantive support for a change in practice.

Because they did not receive professional development, we asked participants what types they would have wanted. We identified four themes in their suggestions. The first, which we call *SAGE orientation*, would provide an overview of the four SAGE components, the theory of action underlying the elements, and suggested practices to leverage SAGE power. Paula Walworth, principal at Earhart Elementary put it this way:

> Some staff development on the SAGE program. What are its goals, what is its whole theory? So that there would be an awareness of the advantages we should expect by being a part of this program. Some staff development on, given a smaller class, what is it we expect you to be doing because you have fewer students? Some professional development that says, "You have fewer numbers and the expectation is that you will have more communication with parents now. . . I don't know that any of that happened but it would make sense to me that that might be something that would be both beneficial to the program and to the teachers. . . .Professional develop has really been not because of SAGE but because of other initiatives and making sure that we are ready for those

Teachers and principals suggested a SAGE orientation in five of the nine schools in our project. We can see several reasons for this suggestion. First, is the perceived lack of specific orientation to the program, felt acutely by teachers and by new administrators. Second, this lack of orientation was exacerbated in systems that administered SAGE centrally rather than at the school level. If school level personnel did not deal with any of the compliance reporting or goal setting, SAGE was invisible. This was the case at Earhart, where the central administration did all budgeting, goal setting and reporting. Third, concern about goals, practices and outcomes, so prominent in standards based systems, was part of the professional development systems in most of the schools and the lack of explicit statement of SAGE goals was seen as a missing tool. Sharon Sellers, a third grade teacher at McMahon said that the district assumed that they knew what to do, that the focus was primarily on getting the SAGE funds:

> The whole push was money. If we're SAGE, we get this much money and you're going to have 15 kids. Oh, OK, good. Never even considered how can we change our teaching, what, how could we re-organize, nothing was mentioned. And that makes me feel bad that we didn't do that.

The teachers felt guilty because they recognize the incredible investment the state has made in SAGE and they wanted to help maximize the return. Mrs. Walworth said it well:

> The system is really focusing on class size. When it's threatened in the budget, it's that it will increase class sizes. Nobody ever says, "It's going to change community involvement, it's going to change professional development." . . .So I would put that emphasis out there more publicly. Not only does it value programming for kids, but it

really puts a different value on teachers . . . .The funding isn't to keep fewer kids together, it's to give us better teachers.

A second thread in desired professional development was directly related to *changes in instructional strategy* implied by the 15:1 group size. Ms. Stratton foreshadowed this idea earlier – how do you teach smaller groups? If you are doing the same thing you did with 30, then why have 15? It was also noted by Mrs. Walworth who extended instructional practice beyond the classroom door suggesting if you are teaching smaller groups – shouldn't there be *more or different* interaction between families and teachers if there are smaller classes? Ms. Stratton shared a list of things teachers should learn about to make the most of SAGE: "Let's find out how to do small group instruction. Let's find out how we can teach to kids and not have chaos in the classroom. Let's find out how we can do learning centers better. How can we teach kids to be independent learners?"

Teachers and principals had many ideas about how to go about doing this. Some suggested that principals should have professional development related to SAGE so that they could provide the kind of instructional leadership in the school that would change practice. Others thought that sharing concerns and successful practice among SAGE teachers in a district (preferably by grade level) would promote change and recognize the expertise of local teachers. Some thought that visitation to other SAGE sites would provide powerful lessons. SAGE workshops focused on successful classroom and administrative practice were also mentioned. Mrs. Feller, a first grade teacher from Bethany noted:

> Classes on cooperative learning, or like constructivist lessons would be good. I think a lot of teachers don't realize what a goldmine it is to have such a low ratio. I think if you're still teaching by the worksheet by the book every day, you're not utilizing the great gift of having 15 to 1 or 30 to 2 that you could, to meet those kids on an individual basis . . . Having teachers who are in a traditional classroom come into a SAGE classroom that is doing a lot of that just to see all the neat things that it affords you.

The implementation of SAGE came up against a very real physical reality in many schools. If you reduced class size, you needed more sections per grade, but many schools did not have sufficient space to house these additional classes. As a result, a number of schools used a pupil-teacher ratio approach by pairing two teachers with a large group of students (holding the ratio to 15 to one but increasing group size to 30). The third theme was distinctly related to schools that employed 30:2 configurations – the *perils of team teaching*. This approach was so different from the traditional one teacher-one classroom model that teachers were often at a loss as to how to enact it. This was especially problematic because few teachers were given support to facilitate the transition into this partner model.

This aspect had multiple threads to it. The first thread was interpersonal – teachers felt that partnering was akin to a marriage, and an arranged marriage at that. Teaming was a matter of finding the right match, like college roommates, requiring a test to see if individuals were compatible. Mrs. Dupont, a kindergarten teacher at Allerton-Farwell thought that:

> At the very least, I think that two people that are going to be teaching together should sit down and maybe ask, "What's your teaching style? What are your strengths? What are your weaknesses?" But we haven't implemented anything like that, but I think it would be a good plan.

Mrs. Manchester, a kindergarten teacher at Wellstone, who had seen her own teaching partnership fall apart when her colleague had taken a sabbatical rather than continue teaching in a troubled pairing told us:

> Somebody said, "That's got to be hard if you're in a classroom and you have two different ways of managing or you have two different philosophies." I said, "Yeah, it can be." Because another teacher was saying she works with somebody who expects the kids to sit and be quiet and do what I tell you. And she says, "Don't they train you to work in a SAGE room?" And I said, "Not really. They don't." . .Maybe a class on communication. Almost every teacher I've talked to at this school says that is the hard part, if they are in a class with another teacher that they don't meld with.

Beyond the interpersonal issues, participants struggled with how to implement a two-teacher context. In our observations in 30:2 classrooms, most of the teachers utilized what we came to call *tag team* where one teacher took charge and the other worked on clerical tasks or did limited disciplinary support when necessary (Graue et al., 2005). This approach, which came out of teachers not having experienced real in-time collaboration between colleagues, resulted in an *increase* in group size rather than a decrease. Finding ways to change practice so that pairs of teachers *co taught* was a goal for a number of participants. Mary Durst, principal at Montford told us:

> I want to set high expectations, when there are two teachers in the room, this is what there should be most of; this is what there should be least of. You can't say that there won't be any time when you are going to have 1 to 24, certainly there's going to be that time and sometimes that is good for the other teacher to make a phone call or take care of an individual child. But most of the time there should be 1 to 12 ratio or 2 to 25. . .I don't want you to be the 23rd child in the room, you're just sitting in back and enjoying the teachers lesson. There are other roles you can play.

Teachers at Montford picked up on that idea, anticipating that they could learn much about working in partner situations. Mrs. Miller who in addition to teaching one half time in a second grade also facilitated professional development at Montford noted:

> I think next year we'll have more because Mary found these resources about how teachers can work together. You know, there's so many different ways that you can do it. I think next year we're going to incorporate that in more so teachers see that there's different options, and not just one leads and one supports.

The final theme suggested that *SAGE was not something that was a focus of professional development*. For a number of the participants, SAGE was a piece of a bigger puzzle of schooling. There were several ways this was described. Mrs. Collier, principal at Calloway Academy thought it was more important to look at the ends they were trying to achieve than the means:

> When we look at professional development, to say it is for SAGE when no matter what you offer it's to help teachers gain strategy and confidence in meeting the individual needs of students—it's not specifically for SAGE. The bottom line is, what do teachers need, what support do teachers need in order for them to move the children forward?

Extending this idea, Penny Karson, district administrator in Bellamy noted:

I'm afraid you won't like this but we don't talk that much about SAGE itself. *SAGE isn't a thing*. SAGE is a funding source that helps to support where we want to go. So what we talk about is the achievement gap and we talk about, the logistics of how is it working, and do you have enough classrooms and pulling the SAGE principles together. But we mostly talk about our commonalities of what we're going for here.

Rob Forelli principal at West Canton, a K-12 school in a rural area told us that SAGE and non-SAGE schools and classrooms were no different: "There isn't anything in terms of it being unique, saying well, that we separate between SAGE and non-SAGE, those kinds of things are treated equally or the same, or with the same philosophy."

More important than specific small class strategies was fully embedding SAGE in the high expectations practices of a school or district through "best practice." In a number of schools, the focus of professional development had been on research-based, high expectations best practice to equalize student opportunities. This attention to equity and the power of practice that was "best" for all made thinking about special strategies for small groups problematic. If you provide special programming for SAGE schools, it would not be fair to the others. And if practice was different in SAGE schools, then what was *best* about best practice? Mrs. Rich, a split 2-3 teacher at Earhart helped us understand this view when we asked her what kind of PD would be designed to help teachers make the most of SAGE classrooms:

Gosh, I don't know. I can't really think of anything. I think any kind of staff development that is designed to improve teaching, to make it more best practice is going to be valuable staff development, whether it's geared toward SAGE or geared toward a larger classroom. I don't think that there should be money spent just for staff development for SAGE schools. I think they need to provide it for *all* schools.

In an interesting twist, a number of teachers aligned themselves with best practices as defined by their district and felt that it was easier to implement them in smaller classroom. In fact, they wondered if best practice was doable with more traditional size groups. A number of teachers mused that they could not imagine implementing best practice with a larger group – it just seemed physically impossible.

Reviewing our conversations about professional development related to CSR, very few teachers or principals could recall SAGE-specific support, despite advocacy for this programming in the CSR literature. Designing PD to meet their needs, participants suggested orientations on the components, assumptions, and practices of the SAGE program, instructional strategies for working with smaller groups, and ideas and supports for co-teaching situations. Some participants indicated that SAGE was not a separate entity in their PD plans, that existing programming was supportive of SAGE teaching. With this as a context, we turn next to the professional development described by educators in SAGE schools, with a focus on how it leveraged the power of class size reduction, home school connections, and rigorous curriculum in the SAGE program.

Models of Professional Development

All nine schools had tri-level models of professional development that included a district component designed around district goals for generally improving student achievement. This level was complemented with building level programming that addressed the specific concerns of teaching and learning in a school community. The final component focused on individual

teachers. While all of the schools shared this general structure, the ways in which they implemented it were quite different. They ranged from diffuse, activity-oriented approaches to fully aligned evidence-based systems.

At the most general, two schools had quite eclectic and weak approaches to professional development, providing a variety of opportunities without an explicit guiding framework that integrated the efforts. For example, Gary Byrd, principal at Wellstone Blvd, a low achieving school, listed a diverse set of PD initiatives: mandatory Direct Instruction training, optional CHAMPs classroom management training provided on Saturdays, math training, six traits of writing, Accelerated Reading. He followed this list by describing his philosophy of teaching quality:

> So there's ongoing staff development. I'm just saying that spark, that is just inside some teachers, just gifted, they're born that way, and it isn't staff development. And the reality is that not all teachers have that spark. They can do a decent job, get a satisfactory rating, the reality is that you aren't going to get a full staff—45 people—with sparks.

This very general view of staff development was shared by staff at the school that had equally general descriptions of what they had learned since coming to the school. In contrast, Rob Forelli, principal at West Canton a rural high achieving school, listed development activities like workshops on six traits or going over a new math curriculum. He noted that staff was supported in their choices to attend self-chosen conferences, workshops and classes, but he did so not because good teachers were born, not made but because *he trusted the professionalism of his staff.* Mr. Forelli didn't stage PD because his teachers knew what they needed while Mr. Byrd figured it really did not make much difference any way. These schools had similar practices but the meanings underlying them and the ultimate outcomes were quite different.

In contrast, schools with stronger professional development plans were *goal oriented and aligned with instructional plans* and/or *evidence driven*. In these schools, the professional development activities related to particular goals at either the school or the district level. Sometimes this alignment was strongest at the school level, related to building level school improvement plans. Ms. Sternlieb, a learning coordinator at Bethany stated this clearly, "Whatever our education plan goals are, that's what we spend our money on for professional development." Mrs. Collier, principal at Calloway talked about how they identified the writing process as a target for development and focused school wide attention on it.

> We look at data and we look at where the children are struggling, and then we look at what's happening in the classroom. For instance, our children have consistently not done well with writing. In the district it takes a 3 to be proficient our children get like 2.5. . . .We looked at writing and we talked about professional development for teachers as well as for the parents and making sure that we provided an opportunity for students to understand exactly what they needed to do in order to write a proficient paper.

In this effort they did curriculum mapping, they worked to develop shared vocabulary about writing, they analyzed the assessment rubrics to make sure that concepts were covered, understood and assessed, they provided family activities at school that illustrated writing strategies, they included all elements of the writing process in student writing portfolios which were reviewed by the principal. Mrs. Trainer, a kindergarten teacher at Calloway, mirrored this strategy when she talked about using a problem-solving model to think about how to use what they had learned in other PD to maximize its utility in a small group context.

Other sites that focused on school level PD designs utilized external funding sources to build capacity. Montford, a rural school, used a Comprehensive School Reform grant to provide professional development with a program called the *Responsive Classroom* (Responsive classroom, 2006) while Earhart used the same funding to support the implementation of *professional learning communities* (DuFord & Eaker, 1998). Mrs. Rich, a grade 2/3 teacher talked about how their principal had provided important opportunities for teachers to learn and work together:

> She made it possible for us to have release time to do team planning and she made it possible for us to have additional release time for assessment. She made it possible for us to get staff development, trying to make staff development opportunities really pertinent to what was going on in the school instead of just filling up those days. . . We broke into smaller groups and then got back together and problem solved and she would get people from downtown that would come out to do different workshops on best practices. She was good at getting us release time to do workshops outside the building if we needed. Like I sent to an ESL one – very helpful.

Gallows used money from a Reading First grant to design and implement a center based balanced literacy program. This program was the most intensive with more than 50 hours of targeted PD on literacy designed in response to teacher need, along with coaching, off site visitation of successful practice, and unification of goals and language among staff. Ms. Stratton pointed to professional development as a unifying force, something they never had before:

> That's one thing that this buildling never truly had was being able to get on the same page. Even though SAGE came in and with our classes of 15, teachers were still doing their own thing in the classroom. It wasn't until we were given the opportunity with Reading First that we are now finally on the same page. And again, it's due to the money in professional development and materials.

In each of these schools, staff echoed the visions of staff development suggested by the core programs, linking language, practice and PD in specific ways.

In other schools the focus was set at a district level, with analysis of student data and goals set for changes in proficiency. Jody Ashton, a district administrator in the Maxwell district where Earhart is housed, described how SAGE, assessment and professional development came together to unify the work of the district:

> At the same time SAGE was beginning to grow in our district, we were looking at the achievement data of kids because we now have a universal primary language arts assessment. We were looking at third grade reading comprehension scores, and a primary math assessment given annually – and we looked at those scores simultaneously and we see language learner scores, the Latino kids' scores or text reading level is lower at 2nd grade than their white counterparts. So staff development as a district how are we going to support teacher learning in that area?. . . .We have become much more exact in our implementation and our staff development in the area of early literacy on how we can teacher kids to be readers and writers and the explicit language that we use, the explicit practices that we put into place. I feel like our K-3 grade classrooms have been transformed from when I entered the district 10 years ago and I think it's a product of SAGE, the assessments, the implementation of balanced literacy, and now implementation of a balanced math program.

This perspective on professional development was threaded through the perspectives of the Maxwell district teachers working at Earhart. When asked to describe what it is like teaching in Maxwell, Mrs. Root, a first grade teacher told us, "I think there are meaningful goals that they have set to be met for teachers. The emphasis on literacy and just the different courses that they offer for professional development."

The district-focused approach to PD was in place in other schools, with less coherence in its implementation. Penny Karson, a district administrator in Bellamy described their professional development system that worked to unify goals and instructional approaches throughout the district. Elementary and middle school teachers were provided with 9 half days of professional development, with a "laser like focus" on elementary literacy and more recently mathematics. The district instituted a balanced literacy system with a complementary assessment system. The centerpiece of the professional development program was the principal as instructional leader who received development in administrator groups and then went back to their staffs to share the learning. In addition, each school had a liason for literacy and mathematics who received training and worked to communicate with staff. This system, focused on building school level coherence and collective participation, broke down at McMahon (a Bellamy school), where there had been five principals in five years. The lack of continuity was exacerbated by the fact that the current principal saw himself as an expert in social and behavioral issues, rather than specific content. The behavioral problems so prominent at McMahon when he took over as principal had been greatly reduced and he was working to help teachers understand the issues the families in poverty face. He readily admitted that instruction was not his strength and that he trusted his teachers to know the content and strategies to deliver it. The teachers we worked with were frustrated with the professional development they were receiving, perceiving it as disconnected with their needs and in many cases a rehash of previous work they had done.

But an observation of a McMahon professional development session serves as an indicator of the importance of instructional leaders.   The first hour of the PD session was spent on a group quiz on issues related to the mathematics program, *Investigations*. Lead by the principal[3], teams of teachers filled in incomplete statements about the math program. This activity is an attempt to actively engage the teachers by using a game format. The content of the activity was out of line however. With questions like "By ___ grade, students using Investigations are working with substantial numbers" or "Operations are learned as a cohesive whole in Investigations because they are _____(8 letters) related to one another" the focus became guessing and getting through the questions. The form of the activity, rote recall, was at odds with the theory and practice of Investigations, an inquiry based approach to mathematics. By the end of the hour, the teachers were frustrated and more than a little irritated. Even the prizes given to the winners (fuzzy topped pens that lit up) did not seem to raise spirits. The rest of the time was spent reviewing report cards from a sample of other districts but little rationale for doing this was given and teachers felt it was a dead end since they had no input on the ultimate form a report revision would take. This session had elements of high quality professional development – it was connected to other PD strands, it was done in a community of colleagues, it was embedded in the teachers workday. The mismatch to the theory of action in the content and lack of attention to teacher buy in made it much less effective. The instructional

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[3] It is worth noting that Dr. Post noted that he "stole" this activity from another principal. There may be more systemic misunderstandings of the mathematics content across staff.

leader approach requires strong knowledge of content and pedagogy that was missing in this context.

We observed a wide range of professional development strategies in our study schools, illustrated by the summary in Table 2.

Table 2 about here

At the weak end of the continuum, schools had a buffet approach from which teachers could choose, with options of workshops and conferences on a variety of topics without a unifying framework or alignment to instructional goals and practices. In contrast, schools with strong professional development programs linked professional development to important educational goals and instructional strategies, using evidence of student outcomes to identify specific initiatives. The success of professional development activities was dependent on their enactment in a particular local context, connected to supplementary funding and the skills of principals to lead an instructional reform.

There was not a linear relationship between student achievement and enacted professional development in our sample. While high achieving and rapidly improving schools were more likely to have components of high quality professional development programs, there were also outliers – one high achieving school with a weak program and a low achieving school with a very progressive, comprehensive program. In many ways the professional development program was like a symphony –it is dependent on a good composer but that alone does not guarantee a pleasing sound. All the elements need to be orchestrated in concert and it is likely that a performance by one group will be different from another. The quality of the program reflects the qualities of the parts and how they play in a local context.

Discussion

The SAGE reform represents the coming together of several school improvement strategies aimed at supporting student achievement. At the heart of the policy is smaller classes in the primary grades, premised on the assumption that with smaller classes teachers will more finely tune their instruction to student needs through intense ongoing interaction. While this principle intuitively makes much sense, its practice is less than seamlessly enacted. Given their histories as participants and teachers of larger groups, the strategies developed over time slide into the smaller class context with little reflection on how they might be changed. Bill Post, principal at McMahon, told us that he was amazed when one of the most thoughtful teachers on his staff told him that she got finished with lessons faster when she moved to a smaller class context. Rather than thinking about the depth that could come with fewer students, her initial reaction was speed.

To help teachers reconceptualize their role, class size reduction researchers have suggested professional development focused on acquiring small group instructional strategies that activate the class size reduction resource. The SAGE legislation includes a professional development component that supports improvement in teaching with provision of a transition program for teachers new to SAGE schools, scheduled planning time, ongoing evaluation of performance and remediation plans. Schools complied with this component through already existing professional development plans rather than developing SAGE specific educational opportunities. This could be very fruitful if the existing program provided the types of knowledge that would leverage the most power out of SAGE as it would embed professional

development content in a broader system of knowledge and support. We are not convinced that it did.

Probably the most resounding finding in our project is that no one could identify professional development that was designed to help them understand the SAGE program or to help them change teaching practices in CSR specific ways. It was as if they were given a set of knitting needles with the assumption that all their years of crocheting would provide the necessary training to make a sweater. This was made more difficult when it was expected that *two* people would knit the sweater in the 30:2 configurations. This lack of attention is curious in an era of standards and alignment, where a basic strategy for improvement is articulation of goals and the development of plans to meet them. Participants thought it would be important to provide an orientation to the SAGE program so that participants would become familiar with its elements and intentions, paired with workshops on *how* to implement SAGE through examples of administrative strategies for principals and room arrangement or instructional examples for teachers. Finally, teachers in teamed situations felt professional development on working with a colleague would greatly enrich their teaching.

SAGE was implemented at the same time that many schools reduced attention to generic workshops on instructional activities. In the place of one-shot make-it-and-take-it presentations by experts, schools were likely to design professional development around student learning needs and increasing teacher knowledge about specific content. This evidence and standards based approach to professional development became the umbrella under which SAGE professional development was most frequently provided. Our question is to what degree content based best practices and small class instructional strategies overlap? If you know best practice in early literacy or early mathematics do you have everything you need to know to make the most of a smaller group? Is it really like Budweiser, that when you've learned best practice you've learned it all?

The scholarship on class size reduction has not provided broadly applicable and specific suggestions on what small class teaching should look like. While earlier work by SAGE evaluators provided important beginning insight, suggesting that more effective teachers focused on academic content, they used structure to manage groups and individuals and they individualized instruction (Zahorik, Halbach, Ehrle, & Molnar, 2003), the generality of the guidelines has not provided educators with the guidance they hoped for. In addition, they do not take into account many of the contextual issues that Blatchford (2003), Evertston (2000), or Grissmer (1999) have suggested. If we are to fully understand how class size reduction is implemented and its connection to student outcomes we need to follow Evertson's suggestion that:

> Future investigations of the effects of reduction in class size will have to include analyses of local and cultural definitions of learning, definitions of what is seen as "good teaching," what knowledge is of most worth, and expectations for how students are to engage in content knowledge. (p. 8)

This situated perspective reminds us that resources are not tools that might be interchangeably inserted in varied contexts with like outcomes. Instead, resources like class size reduction and professional development are contingent additions to existing systems with goals, roles, and relationships that shape their activation. How schools and individual teachers use professional development to make the most of class size reduction will depend on how those elements fit into

broader systems of instructional practice, the incentives that facilitate their use, and the degree to which there is a systemic effort to call attention to the specificity of practice in smaller classes. The original SAGE legislation recognized the complexity of the resource-context relationship and we think it is well worth the effort to go back to basics, reestablishing the importance of professional development in class size reduction efforts generally and in the SAGE program in particular. On the research side, we need further analysis of the multiple ways that smaller classes can be successful with attention to best practices in the varied content. These analyses must also work to connect constellations of instructional practices with administrative practices and broader education contexts. Without attention to this kind of contextual information, the understanding of instruction is untethered from its reality. On the professional development side, understandings of best practice in class size reduction should be connected to the knowledge bases of the content of the primary grades and referenced in concrete ways to the local practice and goals of a school and/or district. Bringing those bodies of knowledge together in explicit ways make it more likely that they will be considered together and merged in teacher practice.

School	Bethany	West Canton	McMahon	Earhart	Calloway	Montford	Allerton-Farwell	Wellstone Blvd.	Gallows
Achmt	High	High	Improving	Improving	Improving	Improving	Low	Low	Low
Geography	Urban	Rural	Semi-urban	Semi-urban	Urban	Rural	Rural	Urban	Urban
District	Mallard	West Canton	Bellamy	Maxwell	Mallard	Walton River	Allerton-Farwell	Mallard	Mallard
Yrs SAGE	4	4	4	4	4	4	6	6	4
Gr. Span	K4-06	E4-06	KG-05	KG-05	K4-05	E3-06	E4-12	K4-05	K3-08
04 Enrllmt	514	340	237	238	276	385	460	556	557
%Black	74%	0%	27%	18%	19%	2%	0%	57%	67%
% Hispanic	2%	0%	9%	10%	34%	0%	6%	23%	19%
% ELL	7%	0%	3%	33%	9%	11%	0%	37%	1%
% S/Dis	9%	21%	24%	8%	22%	9%	21%	16%	38%
% FRPL	83%	40%	57%	62%	75%	61%	65%	96%	82%
Wisconsin 3rd Grade Reading Comprehension Test 2001-2004 Percent Proficient & Advanced									
Mean	73%	85%	74%	69%	77%	66%	68%	35%	38%
SD	12%	4%	7%	12%	9%	12%	8%	11%	10%
Wisconsin 4th Grade Knowledge & Concepts Test 2001-2004 Percent Proficient & Advanced - Reading									
Mean	88%	87%	76%	68%	77%	71%	68%	46%	35%
SD	7%	4%	10%	14%	17%	12%	7%	14%	4%
Wisconsin 4th Grade Knowledge & Concepts Test 2001-2004 Percent Proficient & Advanced - Math									
Mean	79%	80%	60%	59%	69%	54%	55%	27%	26%
SD	22%	7%	17%	13%	17%	19%	4%	9%	8%

Table 1

Sample Schools

School	Form	Duration	Collective participation	Content focus	Teacher Active learning	Coherence
Bethany	Reform and traditional	Ongoing	Collective	Direct instruction	Peer coaching, sharing and cross grade work	Focus on education plan goals
West Canton	Traditional workshop, conference	Intermittent	Limited	Limited	No	Limited
McMahon	Combination Principal as instructional leader, Breaks down if principal does not know instruction	Ongoing	Collective	Literacy, math	Potentially but missed mark since content does not match philosophy of teaching	At district level but teachers lack buy in, reducing coherence

School	Form	Duration	Collective participation	Content focus	Teacher Active learning	Coherence
Calloway	Combination	Ongoing	Collective	Focus on writing	Active, families included	Aligned with student achievement & instructional goals
Earhart	Reform–embedded in teacher day	Ongoing	Collective	Literacy, math, professional learning communities with school assessment of need & collaborative planning	Explicit staff planning time for problem solving & support	Aligned with assessment of student achievement & instructional goals
Montford	Combination	Ongoing	Collective – each school has PD facilitator	Balanced Literacy, responsive classroom	Active	Active
Allerton Farwell	Traditional workshops, conference	Intermittent	Combination	Dimensions of learning,	Combination	Principal is trying to unify approach, teachers resisting

School	Form	Duration	Collective participation	Content focus	Teacher Active learning	Coherence
Gallows	Reform	Ongoing, intensive	Collective	Balanced Literacy	Active – visitations of best practice, intensive workshops, staff planning, peer coaching	Unified approach from Reading First grant
Wellstone Blvd	Traditional workshop, conference	Intermittent	Limited	Diffuse	Limited	Limited

Table 2

School Professional Development Summary

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