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Designs for Simultaneous Renewal in University-Public School Partnerships: Hitting the "Sweet Spot"

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The promise of university-public school partnerships as contexts for mutually beneficial learning, or "simultaneous renewal," has been well established (Goodlad, 1994, 1999). However, difficulties in creating and sustaining these kinds of collaborative contexts for teacher education are also well known, including practical challenges such as time and distance, as well as the nuanced and layered tensions between institutional missions, cultures, and practices (Mantle-Bromley, 2002; Teitel, 1997). Contemporary efforts to create and sustain university-public school partnerships are further complicated by dramatically increased accountability pressures arising from No Child Left Behind (NCLB). Discretionary time for public educators is a scarce and dwindling resource.

As high stakes testing and related accountability pressures increase on institutions of higher education, chronic shortages of resources to support collaborative work with public school partners are a widely acknowledged fact of life in partnership work. In the context of these kinds of institutional pressures it is clear that collaborative partnership work must be carefully designed to yield visible and valued benefits for both university and public school-based educators (Yendol-Hoppey, League, Gregory, Ohlson, & Jackson, 2006). In this article we describe a design strategy aimed at creating shared opportunities for teacher learning and development, including the learning of university faculty, that may be embedded in practical activities related to the analysis of P-12 student work. We offer three illustrations of how we have used this strategy to design shared contexts for learning that are relevant to the (differing) needs of teacher candidates, public school colleagues and university faculty.

Theoretical Orientation

Our approach relies particularly on socio-cultural theories of learning (Brown, Collins, & Duguid 1991; Rogoff, 1996; Vygotsky, 1978). One of the promising features of this general theoretical orientation as an approach to problems of teacher learning is its conceptualization of learning as change in the ways individuals participate in socially and institutionally situated activities (Chaiklin & Lave, 1996; Lave & Wenger, 1991; Wenger, 1998). This approach re-frames many traditional dichotomies in learning theory, such as those between "acquisition and generalization" or "theory and practice" as differences in activity.

In the context of programs of teacher education and professional development, this perspective brings very practical questions to the foreground regarding what kinds of activities are undertaken, in what contexts, and with what participants. For example, instead of assuming that a preservice teacher learns a concept or skill in a university classroom and then must "apply" it to her practice in a public school classroom (or somehow translate "theory into practice"), socio-cultural theory suggests that what is learned is always a complex interweaving of activity, situation, and participation, and that learning to do something in a university classroom is not the same thing as learning to do it in a public school classroom. Understanding learning to teach as more than acquiring ideas or behaviors focuses theoretical and programmatic interests toward approaches to teacher learning embedded in practice.

One of the most promising contexts for such an approach consists of activities that focus on analysis of student work (Gearhart, Saxe, Fall, Schlackman, Nasir, Ching, Bennett, Rhine, & Sloan, 1999; Kazemi & Franke, 2004; Little, 1999). In one of the few studies which has attempted systematic description of linkages between school reform policies, opportunities for teacher learning, and student achievement, Ancess (2000) found that what most drove teacher learning (and concomitant changes in practice) was teachers' motivation to affect student outcomes—which

was heightened by their examination of student work. A conceptually important feature of this approach is that it essentially fuses teacher learning processes with analysis of student learning.

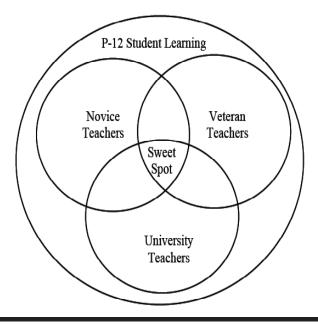
In this article we describe our efforts to design collaborative learning opportunities within a public school-university partnership for teacher development with these concerns in mind. The design principles we have used in developing these activities include: (a) a focus on concrete examples of P-12 student work (Kazemi & Franke, 2004); (b) collaborative participation by pre-service teachers, veteran teachers and university faculty; and (c) potential for learning outcomes of direct relevance to the core institutional mission and responsibilities for each group of participants. In developing a visual representation of these principles, we colloquially defined the "sweet spot" of our collaborative work as the intersection of opportunities to learn by pre-service teachers, veteran teachers, and university teacher education faculty in a shared context which focused on analysis of P-12 student learning (see Figure 1).

Case Illustrations

We describe three case examples designed to "hit the sweet spot" and discuss the contribution of each of these to teacher learning and renewal of practice in both

Figure 1.

Sweet Spot: Intersection of Meaningful Oppostunities to Learn for Student Teachers, Vetreran Teachers, and University Faculty.



the school and university settings. All three contexts are created through the intersection of meaningful opportunities to learn for student teachers (pre-service teacher candidates), veteran teachers (primarily those participating as cooperating teachers with the university program), and university faculty. Although different learning agendas exist, the activity is designed in each case to create a common context and object of study related to K-12 student work. While each of these cases represents a "real" example of activities we have designed around the "sweet spot" idea, and draws upon some (limited) documentation of these activities, they are not offered as formal research "case studies" in the fashion described by Yin (2003) and others. The observations and quotes from participants (while drawn in several case from research studies carried out in one of the contexts we describe) are offered only to enrich our descriptions of the activities and the ways we believe they have functioned as opportunities to learn for our students, our P-12 colleagues and our faculty (Yendol-Hoppey, et al, 2006).

Studio Days

This example of shared collaborative learning was structured around a set of professional development and pre-service education activities conducted in one of our Teacher Education Program (TEP) partner schools, what we have come to call "Studio Days." The design and enactment of Studio Days aimed to reduce the physical and temporal separation of university coursework and fieldwork that so often makes communication among TEP students, university faculty, K-12 teachers, and supervisors difficult and strained. These key players often assume that they are working towards the same goals. Yet, without opportunities to develop relationships and mediate common understandings across contexts, they can be like ships passing in the night. Thus the Studio Days were designed to open up opportunities for university-based and school-based teacher educators, as well as teacher candidates, to engage in conversation around concrete and substantive problems of practice in teaching and learning. We aimed to design Studio Days in ways that would be relevant to the core missions of both the university and the partner school.

To illustrate how these goals played out, we describe one of the Studio Days that we organized in elementary mathematics methods. The math methods course paired up with a first grade class in one of the TEP partner schools. It was May and time for the first graders to take a number sense assessment designed to gauge their competence in a variety of counting and computational skills. Students in the TEP course were learning how to elicit students' mathematical thinking and interpret their responses within a framework for the development of children's understanding of number and operations. TEP course activities contributed to preservice teachers' understanding of the form and content of the number sense activities: What should first graders be able to do and how was that related to the design of the assessment? How might first graders respond to the assessment questions? How does a teacher interpret and score these responses? And what might a teacher do with the results

of such an assessment in making decisions about supporting individual children as well as the whole class?

One of the primary goals of the methods course was to help preservice teachers learn that children do in fact have mathematical ideas and that teachers need to be skilled in eliciting those ideas. A central task of mathematics teaching is to design classrooms tasks and discussions to engage those ideas purposefully and advance mathematical skill and understanding. Learning to elicit children's ideas is not a trivial task and is often the first step in digging deeply into the work of teaching mathematics (Kazemi & Stipek, 2001). The first grade number sense assessment required by the district provided an opportunity for our students to practice their eliciting skills by conducting clinical interviews with the children. Clinical interviews are an effective way to develop rich and deep understanding about a child's thinking (Ginsberg, 1997). But they require much time to conduct. Our ability to interview all of the children at once and collate this rich set of data was an enormous benefit to the classroom teacher who gained much more understanding about her students' development than a simple pencil and paper test.

The Studio Day was designed so that each TEP student paired up with a first grader for the interview. After the interviews were completed, preservice teachers and faculty gathered together to interpret and score the assessment and then collated the results across the whole class to share with the classroom teacher. This collating enabled the preservice teachers to share and discuss particular observations and make sense of those observations against the framework for children's thinking. The math educator faculty member described how this activity supported her instruction for preservice teachers:

The student work generated by the interviews allowed us to engage questions such as "What makes this hard (or easy) for the students? Exactly what mathematics are involved in this problem, and how do you figure that out? How would you characterize this strategy that I saw?" It enabled us to examine the range of skill and understanding that a teacher might face in a typical class and consider the pedagogical decisions and choices teachers could make to meet those needs. These are the questions that I want my students to consider when they are working with students, and modeling this kind of thinking and decision-making together builds particular habits of mind that I foster over the course of the methods courses.

Because this work was done at the partner school, the classroom teacher was also available to answer questions about the work the first graders had been doing and engage with preservice teachers around the framework for children's thinking. These conversations were crucial because there was a direct and purposeful link between what students were learning in the TEP methods course and classroom instruction. In some cases, this opened up opportunities for the classroom teacher to learn more about ways of interpreting student thinking and thus advance her own learning as a professional. In this particular case, the framework for interpreting children's strategies is drawn from a research and development framework, Cogni-

tively Guided Instruction (CGI) (Carpenter, et. al, 1996). Practicing teachers in our partner schools (through university-sponsored professional development efforts) have been simultaneously learning about this framework. So, in this case, university faculty were able to apply some of the big ideas of that framework to the way we interpreted and coded the student responses. This was helpful to the classroom teacher because it was a concrete instance of seeing how that framework layered into the work that she was expected to do.

The university instructor described how these data were analyzed in ways that were useful to the classroom teacher:

It became apparent, through our analysis of the whole class, that her first graders were ready to be challenged to move their problem solving approaches beyond "counting all" strategies. We also noted by compiling our interview data that students were very comfortable with a particular kind of word problem and struggled with others. Set within the CGI framework, we were again able to see how a teacher would actually make use of knowledge of problem types in order to make instructional decisions. It was clear, from the interview data, that the students had mastered a particular kind of problem and needed to be given the next challenge. What was powerful, through the structure of this studio day, was the opportunity to see that her students were ready for that next instructional push. Had we just interviewed students idiosyncratically across classrooms or schools, we would not have been able to see this. The teacher had not compiled her assessment data like this before, and she left the studio day ready to experiment with the next set of problems she would pose to her class. For my students, I wanted them to begin to think about how they take stock of their class needs as a whole. In addition, because university supervisors participated in these Studio Days, they also entered conversations with the group to build shared understandings about what TEP students needed to learn and practice in terms of eliciting and interpreting children's mathematical thinking.

The strength of the Studio Days is that they create a common context that is used in differing ways as an opportunity for learning by novice teachers, teacher educators, and experienced classroom teachers. We have used Studio Days across all of our methods courses in different ways. In addition to the assessment example we elaborated here, we have collaborated with classroom teachers to model examples of particular kinds of lessons and classroom activities such as guided and shared reading in literacy, to lead problem solving discussions in mathematics, and to run classroom meetings to build community and address children's social development. These activities serve as a significant avenue for building shared visions, meanings, and questions about the work of teaching and the development of teachers and teacher educators (mentor teachers, supervisors, and methods instructors).

Field-based Secondary Math Methods Course

Recently, we have been working with a group of teachers in a local urban high school to raise the achievement of the students in their first year mathematics classes.

At the end of last year, the teachers in this school did a guided inquiry into the high failure rates of students in these classes, which at that time was approaching 80%. We looked at a variety of data, including disaggregation of failing students by race, failure in other academic classes, etc. Then, with the teachers, we brainstormed all the reasons we saw for student failure.

At the same time, data from a study of pre-service students' experiences learning within the teacher education program brought out the challenges faced by pre-service teachers because of the limited or unmediated interactions they had with students during their training. We saw the potential for a useful synergy. Preservice math teachers could learn about using student data and learning through practice by visiting the classrooms of this local high school, where the teachers were undertaking the same kind of work. Once a week, the teacher education professor accompanied students to the local high school. They conducted structured observations or interactions in two ninth-grade math classes during fifth period, met with the teachers to debrief about the classes during sixth period, and then met without the teachers for another 45 minutes. Teachers were observed using a new curriculum (Interactive Math Program or IMP) and implementing a teaching approach called Complex Instruction (Cohen, 1994).

In both years that this project took place, the TEP students were paired with a "struggling student" (struggling for a variety of reasons which may have included those related to learning English, not turning in homework, not participating in class, special education, etc). The TEP student would observe each week, focusing on the pertinent "essential question" of the week. They would then discuss the specifics of their observations with the classroom teacher and course instructor.

Many of the TEP candidates in secondary mathematics commented that the most valuable experience in their teacher education was visiting the local high school during their methods course. Visiting the local high school where teachers used a reform curriculum to teach mathematics enabled candidates to "see how it is supposed to work." Some students were hesitant about reform curricula. Being able to see the students interact in their groups, engage in mathematical discussion with each other, and present ideas to their classmates gave these candidates insight into the goals of the reform curricula. One of the preservice teachers described the experience this way:

Interviewer: So tell me more about what you liked about going to (the local urban high school).

Susan: Interactions with the kids.

Interviewer: You said "seeing stuff" so what do you mean by that?

Susan: Actually watching the teachers teach so if (methods instructor) talked about something (in the university-based methods class), you could see what she was talking about and how the groups were supposed to work, or ideally, in a not ideal situation see how that was supposed to work. You got to see how kids reacted to

this, how kids reacted to the curriculum. So that was nice because I had a lot of misgivings about the curriculum because my kids did not have that and I didn't go through that so I wanted to see.

Because this pedagogy is "reform-oriented" and therefore new to many mathematics teachers, the TEP students are often not placed, during their other field experiences, in classrooms that model the same pedagogy supported in the methods course. Being able to see teachers implement a method of instruction that allows students to think deeply about mathematical concepts and engage in mathematical dialogue with their peers enabled the TEP students to develop a sense of how this teaching plays out in the classroom.

Interviewer: So, what things have you learned in the program so far that you feel are the most important to you as a teacher?

Victor: Because if I didn't have the (field-based) methods class, or before the methods class, the only way I have ever known and thought about teaching was just in a traditional way. What seemed normal was just being in front of the class and explaining something, putting it on the board, having the kids write it down, and then giving them problems to practice on. And a lot of the ideas that we take from the methods class, I feel like I do a lot of those things... I try to evaluate what (the students) are doing, what they're thinking, and I throw sample problems at them and ask them for their ideas or how they think about it.

Veteran teachers have commented several times that having the methods course observations have been an invaluable experience. First, knowing that the TEP students will be observing their lessons presses the veteran teachers to plan lessons that attempt to demonstrate effective teaching practices. One veteran teacher noted that, because the TEP students were coming to observe her class, she often spent more time planning her lesson as she wanted to be sure it was well thought out. Another veteran teacher commented that, as she was planning her lesson, she would think about what a TEP student might possibly ask her about the lesson or the objective of the lesson. She strived to be able to justify her decisions for her lessons as she was planning each lesson.

Another outcome the veteran teachers mentioned was that they learned a great deal from the discussions after the observations. Often the TEP students would question the veteran teachers about particular decisions they made while in class. This prompted immediate reflection of the veteran teacher. The veteran teacher then had to explain why she made the decisions she did and was also free to evaluate the effectiveness of her decisions due to the supportive nature of the discussions. For both veteran teachers and TEP students, the reflection, justification, and evaluation were critical to their learning.

The veteran teachers were also able to learn a great deal about the struggling students the TEP students were observing. Teachers are often not able to hear everything that goes on in each group during a class period. The TEP students were

often an extra pair of eyes and ears and would report to the veteran teacher about what they heard and had seen regarding the mathematical thinking and behavior of the struggling student. During the debriefing period after class, each TEP student would comment on what their struggling student did in class, what he/she was able to do, how he/she worked in their group, and what he/she knew in terms of mathematical knowledge. For the veteran teacher, this was invaluable knowledge and greatly assisted them in better understanding their own students.

The university instructor reported the following impact on her own practice with respect to a shared experience with preservice and classroom teachers:

As a methods course instructor, it is often difficult to get students to connect the theories we learn in the course to the practicalities of the actual classroom. Using examples of teaching in class is effective but only to a point. The context of the example is lost because we do not all know the circumstances of the example, the student or teacher involved, or the classroom environment. Often, TEP students come back from their field placements with questions about particular instances they observed. Yet, no matter how well they do in describing the situation, the fact still remains that we are seeing the situation through one pair of eyes. This is not the case during the observations at the local high school. Here, we are all present and we all observe the same lesson. And, even though we all observe the same instance, we each have our own interpretation and often "see" different things. This creates a space for rich discussion and learning opportunities. It also gets at how complex teaching can be.

The debriefing session also created a valuable opportunity for the course instructor to gain insights about candidates' learning:

During the debriefing session after the observations, I am able to gain more insight into my students based on what they say and the types of questions they ask. I am able to see the different areas in which my TEP students tend to struggle and then adjust my lesson or change the direction of the conversation to meet the needs of my own students.

Finally, immersing the methods course students in classroom observation gave the entire class a set of practical examples from which to refer:

We may have all seen one of the veteran teachers give her students a "group test." Although that may not have been the focus of that observation, we are still able to refer back to this example and discuss it during the university class. This gives us a common base of examples from which to draw—and it vastly enriches the discussion we are able to have as a group even though we may not have paid attention to the same things during that lesson. We understand the context, the teacher, the student, and the lesson.

Video Traces: A Virtual Space for Teacher Collaboration and Learning

VideoTraces (Stevens, 2007; Stevens & Hall, 1997) is a digital annotation technology that allows educators working in different places and at different times to

view and collaboratively analyze video clips and still images which represent concrete examples of classroom practice and student work. Using the Video Traces medium, university student teachers presented examples of their (K-12) students' work and/or related puzzles of practice for collaborative analysis and feedback from cooperating teachers, field supervisors and university faculty. The recorded analyses (called "traces") were accessible to all participants and these analyses themselves, as well as the underlying student work, became the focus of further analysis and conversation.

Records of these conversations, tied as they are to concrete and explicit artifacts of K-12 student learning, make the learning of pre-service teachers, veteran teachers and university faculty visible to one another as the focus and depth of analysis changes across conversation "turns." One example is demonstrated in the threaded conversation initiated by Maya, a preservice teacher candidate. Maya started her trace with a description of a sample of student work from her classroom. Maya asked conceptual and procedural questions about the student's work. She then linked these questions to broader issues about classroom learning by contrasting her student's learning with the rest of the class. She ended her trace by asking for advice and suggestions for strategies. These were then available for review and comment by Maya's cooperating teacher, and her course instructor. As suggested by another student teacher,

So we have a format where we can be thoughtful about asking questions and are expected to ask questions. So it did not feel like infringing through this medium. I asked questions that I would not have asked before.

Veteranteachers at the partner school also reported benefiting from the conversations using Video Traces. Anu, a classroom teacher, referred to a university faculty member's suggestion of possible story contexts. She stated that she would be using these ideas in her own practice and modeled a scenario for the next academic year. Anu gained valuable insight into the challenges her students were facing and saw approaches for addressing their needs in ways that hadn't been explored before. She later commented, "Traces has benefited students in my class."

For university faculty, experiences with Video Traces gave them an opportunity to see what their student teachers were doing out in the field and hear how they were interpreting their experiences. As one university instructor noted,

As a university supervisor too, we are not always able to communicate on a daily basis. So it is nice to be able to communicate and have the artifact before you. Can't do that on the phone.

Traces provided a context in which to more closely connect to the everyday experiences of the teacher candidate. In addition, after viewing traces made in the field by teacher candidates in his course, one university professor described, "Having the artifact and the question together, I could articulate a more fine tuned response." The trace and threaded discussion around it gave the professor a more clearly defined question and afforded him time to think through a more focused response.

Summary: Learning Outcomes in Sweet Spot Activities

Table 1 summarizes the unique opportunities to learn that were created in the three activity settings we have described.

Discussion

Over two decades ago, Seymour Sarason (1990) observed that school reform efforts are not likely to succeed without creation of new activities and settings that are explicitly designed to enhance opportunities for teacher learning. Our efforts to design learning activities and settings in which both novice and veteran teachers, as well as university faculty, have opportunities to learn related to their (differing) practices as teachers suggest the potential of this approach as one dimension of school-uni-

Table I
Summary of Unique Opportunities in the Three Activity Settings

Context	Novice Teachers	Veteran Teachers	University Teachers
Studio Days	Engage in discussions with both practicing K-12 and university teachers; interpret shared experiences with assessment of children's thinking	Gain a deeper understanding about their students' mathematical thinking through interview data collected by preservice students	Direct observation of how teacher education students made sense of math assessments; observe first hand settings in which preservice students are attempting to interpret what they have heard in coursework
Secondary Math Methods	What is being taught in methods course is made concrete by classroom teachers implementation of reform mathematics	Receive detailed information regarding the mathematical thinking and behavior of struggling students; participate in analytic discussions focused on their students and their pedagogy	Direct observation of how pre-service students take up concepts and practices discussed in coursework
Video Traces	Opportunities to share concerns and questions with veteran teachers, university supervisors and university faculty in context of video records of K-12 student work; access to documented archivaresources consisting of Video Traces made by others responding to their questions about student work/ behavior	support a student with respect to a concrete problem of practice	Access to concrete examples of problems of practice encountered by pre-service students in their field work, and how they take up concepts and practices from coursework in approaching these

versity partnership work. Although this was not designed (nor intended) as a formal research study, feedback from pre-service teachers, veteran teachers, and university faculty suggested that these activities provided each with valuable new perspectives on student learning. Activities designed to hit the "Sweet Spot" appeared to allow pre-service teacher candidates opportunities to make concrete sense of concepts and practices presented in coursework in context of "real" work with children in partner school classrooms. Veteran teachers were provided with new kinds of data and related interpretations of student learning in their classrooms, and participated in new kinds of discussions in which their students' learning was the focus of analysis and problem solving dialogue. University faculty were afforded new perspectives on their teacher candidates' learning, as they observed candidates attempt to enact ideas and practices which had been presented in university courses.

Several features of these activities appeared central to their value as opportunities for teacher learning for each group of participants. Foremost among these was the fact that all of the activities were focused around analysis of "real" P-12 student learning in partner school classrooms. The work that was undertaken might be termed "legitimate peripheral participation" in the sense articulated by Lave and Wenger (1991), insofar as it was designed to contribute directly to the instructional mission of the classroom and the school. Sweet Spot activities varied somewhat in the extent to which they were peripheral to the regular routines of classroom practice—and in some ways it was exactly this non-routine quality that contributed to their value, especially to the extent that they afforded new perspectives on (p-12) student learning in the classroom.

A closely related feature of these activities consisted of the way each centered on concrete examples of teaching and learning. An important point to be made here is that the "concrete" is defined not simply in terms of a distinction between material/perceptual concepts versus ideal/abstract concepts, but as a distinction between concepts formed on the basis of identity between elements, and those formed on the basis of interrelationships or connections among different elements (Bateson, 1972; Falmagne, 1995). In the world of practice, "achieving the concrete" may be understood as understanding, not only the elements of practice, but how these elements must be orchestrated in relation to one another in specific situations. Indeed, this may be viewed as the fundamental goal of the process of learning to teach (Smagorinsky, et al, 2003). Activities that "hit the sweet spot" were characterized, in part, by their concrete, practice-situated quality, wherein pre-service students, veteran teachers, and university faculty constructed ideas about teaching and learning that integrated diverse and very specific considerations about the learner, the curriculum and the setting. Comments about the value of these experiences from pre-service teachers and the university faculty suggested they appreciated the value of participation in shared practical activity as a context for learning

A third feature of activities that hit the sweet spot consisted of the focus on a *common object* of analysis. While university faculty, pre-service students, and

veteran teachers' learning often focused on different aspects of the work they were doing together, they also shared a context for dialogue which included examples of P-12 student work, jointly observed classroom routines, and a shared experience of participation in the work of the school. University faculty noted the value of sharing common objects for analysis (such as those represented through Video Traces), and shared observations (such as watching veteran teachers implementing the mathematics groupwork in the urban high school), and how this improved their understanding of the difficulties their pre-service students were having in making connections between ideas presented in their university courses and practices they observed in the schools. Conversely, pre-service students commented on their improved understanding of these ideas when faculty were available to help them make sense of what they were seeing in the schools in which they were working.

In underscoring the importance of designing opportunities for teacher learning with an eye on the hitting the "sweet spot," we want to be clear that we are not suggesting these are the only important kinds of learning opportunities for pre-service teachers, much less veteran teachers or university faculty. The value of activities designed around these features lies more in the way they may complement other kinds of opportunities for teacher learning and professional development. We recognize that the present report, however promising, does not constitute a rigorous empirical evaluation of the learning outcomes we have described. Clearly, we have much to learn about the effects of these and other kinds of collaborative learning activities situated in school-university partnerships (Yendol-Hoppey, 2006). However, the kind of activities we have described here appear to have promise as concrete examples of how university programs of teacher education and their public school partners may collaborate to create opportunities for learning which expand on those they can create alone (Goodlad, 1994).

An important objective for research and evaluation of these kinds of activities consists, of course, in documenting and evaluating their contributions to the core missions of both teacher education programs and the public schools. The extent to which these kinds of practices can be sustained over time is likely to be dependent on the further development and alignment of the model with goals for school improvement and institutional renewal in programs of teacher education. To the extent that teacher education programs can develop pedagogical practices that effectively prepare new teachers, while simultaneously contributing in substantive ways to the work of public school partners, the welfare of both institutions will be enhanced.

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