

Student Teachers Matter: The Impact of Student Teachers on Elementary-Aged Children in a Professional Development School

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Trends in teacher education emphasize collaboration between schools and universities in the preparation and continued professional development of classroom teachers. These linkages are often made under a variety of professional development school (PDS) partnerships (Carnegie Forum, 1986). The works of Goodlad (1990), Levine (1992), and Darling-Hammond (1994) have been widely disseminated, and all are valuable sources of information. They all stress improved preservice preparation as a means of attaining school reform and the efficacy of school-university partnerships as a means of improving preservice education. More recently, the report of the National Commission on Teaching and America's Future

(1996) has recommended the reformation of teacher education through the PDS model. Abdal-Haq (1998) reports that there are over 600 school-university partnerships, with the PDS becoming a widely used vehicle for the educational and professional development of both preservice and in-service teachers.

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Interestingly, the same forces that spawned the PDS movement have also given rise to the reform movement with its mandate for accountability. The hallmarks of the reform movement are curriculum

frameworks, benchmarks, and performance standards. Forty-five states now have standards for students in place; periodic testing to determine whether the standards are being met; and some policy to hold students, teachers and schools accountable for the results (Gergen, 1999; Stone, 1999).

As defined in the NCATE PDS Standards Field Test Project Document (2000), the mission of the PDS "is professional preparation, professional development at all levels (involving school-based and university-based faculty and administrators), and improved learning for students with diverse needs" (p. 2). This definition, developed through an extensive research and development process, captures the best thinking of the PDS movement. Sometimes described as analogous to teaching hospitals in medicine, "these schools [PDSs] aim to provide sites for state-of-the-art practice that are... organized to support the training of new professionals, extend the professional development of veteran teachers, and sponsor collaborative research and inquiry" (Darling-Hammond, 2000, p. 169).

While it has been difficult to separate student achievement from other PDS outcomes, Teitel (2001) argues that multiple measures must be used to assess PDS impacts, particularly "impacts on student learning; impacts on the preparation of preservice teachers, administrators, and other educators; and impacts on the continuing professional development and learning of all the adults who work in the schools and universities" (p. 61). Stallings (1991) and Houston et al. (1999) documented a relationship between changes in teacher behaviors and increased student achievement in the PDS. These findings are further supported by the work of Goddard, Hoy, and Hoy (2000), in which they developed an instrument to measure collective teacher efficacy, defined as "the perceptions of teachers in a school that the efforts of the faculty as a whole will have a positive effect on students" (p. 480).

However, as Knight, Wiseman, and Cooner (2000) point out, there remains a dearth of research on the impact of the PDS on student achievement. They offer various reasons for the paucity of research in this area, the most obvious one being highly complex learning environments and the difficulty of isolating variables in a way that directly ties a PDS to student achievement. A research team comprised of preservice and inservice teachers and university faculty attempted to overcome this research problem by designing a mixed methodology study of student outcomes on newly created writing and math programs. While acknowledging that a direct causal link between the PDS and student outcomes is difficult to substantiate, the researchers found that student achievement increased significantly on the interventions designed collaboratively within the PDS. They concluded that because the activities affected students positively, and "at the same time provided professional development for preservice and inservice teachers, educators could feel confident about their PDS commitment" (Knight, Wiseman, & Cooner, 2000, p. 35).

Three key stakeholders are generally identified in the research about Professional Development Schools — preservice teachers, experienced teachers, and K-12 students (Teitel & Abdal-Haqq, 2000). The purpose of this current research was

to examine the impact of one stakeholder group, preservice teachers, on another, the students in their assigned practicum classrooms. An experimental design was used to study the student achievement outcomes in classrooms with student teachers compared with classrooms in which no student teachers were present that year. The importance of this research is underlined by Fry and Konopak's (2002) call to action, saying that "while those involved in teacher education have made great strides in developing a coherent and defined knowledge base, there is still much work to be done" (p. x).

Method

Participants

Public school students. The Professional Development School at which this study was conducted houses over 1400 elementary school students in grades K-5. Over 80% of the students speak a language other than English at home and 99% qualify for free or reduced-price lunch. The focus of this study was the 485 students in kindergarten and first grade at the time of the study. Of these students, 80% were identified as English language learners at various stages of proficiency and all of them qualified for free lunch. Of these 485 students, 188 were in classrooms with student teachers and the remaining 297 were in classrooms without student teachers.

Student teachers and cooperating teachers. Twenty student teachers were randomly assigned, in pairs, to five kindergarten and five first grade classrooms for a period of 10 weeks. All but two of the 26 kindergarten and first grade teachers offered to host student teachers. The two who did not were first-year teachers.

Student teachers in this cohort program are routinely paired in a partner teaching arrangement during their first semester experience in order to foster reflective practice (Bullough et al., 2002). In addition, these paired placements are notable for the high levels of peer support reported by participating student teachers, particularly in first-semester practicums (Wynn & Kromrey, 1999). It is hoped that early teaching experiences with a peer will foster a disposition toward teaming later. Now a growing expectation of effective teaching practice, collaboration among professionals has been identified as a characteristic of successful urban schools (Taylor, Pearson, & Clark, 2000).

The student teachers were in their first semester of a fifth-year credential program and had taken methods classes in language development, reading, educational psychology, and math. Each student teacher, in consultation with a cooperating teacher, selected a case study student and provided individual instruction daily. In addition to work with individual students, these student teachers provided small group guided reading and math lessons, conducted whole class read alouds and shared reading activities, and planned instruction with the cooperating teacher. All of the student teachers and cooperating teachers were female. Of the student teachers, five were native Spanish speakers, one learned Spanish as a second language, three were

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of Asian descent, one of whom spoke Tagalog, and one student was a native Farsi speaker. In terms of the cooperating teachers, two were native Spanish speakers, one spoke Chamorro (from Guam), and one was African-American.

Instruments and Procedures

Public school students. All 485 students were assessed using the Developmental Reading Assessment [DRA] (Beaver, 1997) as well as the Yopp-Singer Test of Phonemic Segmentation (Yopp, 1995). These two assessments were routinely given three times per year across the school district and were the only measure of achievement available in the district for the primary grades at the time of this study. The DRA and Yopp-Singer tests were given in April, prior to the arrival of the student teachers. These assessments were administered again at the start of the following school year when the students were no longer with the teacher who hosted the student teachers and were mixed with other students who may not have had two student teachers (e.g., the kindergarten students were assessed within the first three weeks of first grade).

Cooperating teacher interviews. Each of the 10 cooperating teachers were interviewed and shown the data on student achievement. The interview focused on the differences in achievement data between classes with and without student teachers. These interviews were scheduled after school and typically lasted between 20 and 45 minutes. Each of the interviews was tape-recorded and transcribed.

Observations. Each classroom was observed by the second author on a weekly basis. These observations were unscheduled and lasted between 45 and 60 minutes. Notes were collected using fieldnote forms (LeCompte & Preissle, 1993), which were later transcribed for analysis. The observations focused on the student teachers and their interactions with students. In addition, the observation notes indicated the tasks of all adults in the room during the observation.

Data Analysis

The pre- and post-test DRA and the Yopp-Singer Test of Phonemic Segmentation scores were compared using independent t-tests. The interview and observations transcripts were analyzed by the researchers and a number of coding categories were identified following multiple reviews of the data (LeCompte & Preissle, 1993). Each of these categories was named and quotes that typified the category were identified. In addition, direct quotes were identified that highlighted the theme or category.

Four classroom teachers also participated in a member check to review the draft findings. A copy of the written findings section was provided to each of the teachers, and a meeting was scheduled to discuss these findings. The member check meeting lasted approximately 40 minutes and was tape-recorded. No major changes were made to the findings as a result of the member check, but additional quotes from the teachers were obtained.

Findings

As with most PDSs, many efforts were initiated to increase student achievement at this school. Staff development events, graduate programs for teachers, and the amount of resources available for books were all changed in positive ways as a result of this university-school partnership. In all likelihood, these combined efforts resulted in the improvement in student achievement. It is important to note, however, that all of the kindergarten and first grade teachers in this study had access to the same staff development experiences, graduate programs, and materials. The difference in their classrooms between April and July was the presence of student teachers.

In April, there were no significant differences on the DRA between students whose teachers would have or would not have student teachers. By July, however, the differences were statistically significant (see Table 1). For the kindergarten students who had student teachers, the mean DRA score in July was 3.21 compared with 2.22 for students without access to student teachers ($t=2.51, p<.01$). For the first grade students who had student teachers, the mean DRA score in July was 14.70 compared with 8.35 ($t=6.15, p<.001$).

On the Yopp-Singer Test of Phonemic Segmentation, there also were no differences between the groups on the April administration. By July, however, the differences were significant for the kindergarten and first grade students. For the kindergarten students who had student teachers, the mean Yopp-Singer score in July was 16 compared with 9 for students without access to student teachers ($t=27.45, p<.01$). For the first grade students who had student teachers, the mean Yopp-Singer score in July was 20 compared with 16.5 ($t=13.75, p<.01$).

Table 1
Comparison of Achievement Scores

Grade	Student teachers	DRA Score	Test Statistic/Significance
K	Yes	3.21	$t = 2.51, p<.01$
K	No	2.22	
1	Yes	14.70	$t = 6.15, p<.001$
1	No	8.35	
Grade	Student teachers	Yopp-Singer	Test Statistic/Significance
K	Yes	16	$t = 27.45, p<.01$
K	No	9	
1	Yes	20	$t = 13.75, p<.01$
1	No	16.5	

But Why?

Following our analysis of the student achievement data, we scheduled interviews with each of the 10 cooperating teachers to share findings with them. In addition, we used our weekly observations as university supervisors to confirm the reports of the teachers. Our interview data can be organized into four major areas, including (1) small-group instruction; (2) not just more adults; (3) course assignments; and (4) cooperating teachers' roles and responsibilities.

Small-Group Instruction

The most common response to our question, "how do you explain the difference between the groups of students who had access to student teachers and those who did not?" focused on the increased use of small group instruction. As one of the first grade teachers said, "The addition of the student teachers allowed me to try out the small-group reading instruction that had been the focus of our professional development seminars. I was a bit worried about trying this, but with the student teachers, we did it together."

Another first grade teacher noted that she could meet with more small groups each day because the student teachers also provided instruction. "I can typically see each student in a small group every other day given all the other things that I have to do. With my student teachers, every student received guided reading and guided math instruction every day. And some students received individual instruction on a daily basis as well!"

Along these same lines, several teachers reported that the increased number of small groups ensured that the classroom operated much more smoothly. As a kindergarten teacher said, "During my small-group guided reading instruction, I typically have a few problems with students working at their centers. Of course this management task takes my focus away from my direct instruction. With my student teachers doing guided reading while I was, we had more students on-task than ever before. And, the classroom management problems were really decreased because they knew several adults were watching them, not just me."

Our classroom observations confirmed these reports. During our multiple observations of these classrooms, we regularly observed small-group or individual instruction. For example, upon entering one of the kindergarten classrooms, we noted:

The 20 students are all working at locations throughout the room. Ms. Javier has 5 students at a teacher center in a guided reading room. Jessica (a student teacher) is working with a group of 4 students on math manipulatives and Paula (a student teacher) is seated with 4 students also doing guided reading. Of the remaining seven students, three are working on computers and four are reading 'independently' in the class library. Every student appears to be 'on-task' at this very moment.

Not Just More Adults

Given the frequency of small-group instruction as an answer to increasing

student achievement, the next logical question we asked the cooperating teachers was, “so, we just need more adults in the classroom?” The answer was a resounding NO. These teachers were very clear in their responses — they had access to many adults such as aides, community volunteers, and parents. They believed that the difference was that these adults understood teaching and learning, specifically in the areas of literacy and math. The teachers also suggested that they spent more time observing, monitoring, and guiding these adults due to the fact that they would soon become teachers themselves.

As one of the kindergarten teachers said, “Oh, heavens no, don’t send me any more adults for my room! I have parent volunteers coming out my ears. I like these student teachers because they understand literacy development and can make instructional decisions themselves. Sure, I need to guide them, but I’m happy to do that. You never know, one of them could be hired to be the first grade teacher that these students go to next year!”

One of the first grade teachers suggested that her commitment to the student teachers, and her trust that they could work with students, was important. “Sure, I like having lots of people in my classroom — it’s an open place. But that isn’t why achievement went up in my class. The volunteers who come in here are great people, and they do a lot of work for me — stapling, cutting, filing, copying, recording grades, creating bulletin boards, you know. I really don’t want them working with kids. These student teachers, though, I really trust. From the first week, I wanted them working with students — small groups at first, not the whole class. But that kind of extra adult is the reason that we’re better, I think anyway.”

Our classroom observations confirmed these reports as well. We observed several adult volunteers as well as high school student mentors from a local high school. However, these individuals were rarely engaged with students. While they clearly completed important tasks for the teachers and probably reduced the amount of time teachers worked after school or at home, they likely had less of an impact on student achievement. The student teachers, however, were engaged with students from their first week. They understood how to provide guided reading and math instruction, conduct literacy assessments such as running records, miscue analyses, and developmental spelling inventories, engage groups of students in listening to read alouds.

Course Assignments

The third most common theme to emerge from the question on an increase in student achievement focused on the course assignments in the student teachers’ methods courses. The classroom teachers were acutely aware that the student teachers had several assignments to complete that required their access to students. These assignments required the student teachers to assess students’ current level of performance and then design instructional plans to improve that performance. Teachers commented on several of the assignments and their impact on student

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achievement as well as the impact these assignments would have on the student teachers' future teaching style.

For example, one of the first grade teachers was most impressed with the library assignment. Student teachers had to assess the library knowledge of a group of students. The student teachers were to create the assessment tool, administer the tool, and then create a lesson from the assessment information. The student teachers in her class created an instrument that required students to identify authors, book titles, and words from a list of real and not-real entries. After identifying the real authors and book titles, they had to find one example of each in the school library. Based on the assessment data, the student teachers decided that they wanted to focus more time during the read aloud on the title and author.

Several cooperating teachers commented on the "math story" assignment. The math methods instructor provided multiple examples of picture books in which math is featured, such as *Among the Odds & Evens: A Tale of Adventure* (Turner, 1999) and *Ten Dogs in the Window* (Masurel, 1997). One of the assignments from this class required that the student teachers create their own illustrated picture book focused on a unit of math they were teaching and then share these with the other members of the class. As one of the first grade teachers said, "I don't have a lot of good math picture books — there may not even be very many. This semester I got 20 new ones — hand done by student teachers. My students love these books, and I really think that they help them understand some of the math standards that I'm trying to cover this year. What a wonderful gift to the school, and what a great assignment for a class!"

One of the kindergarten teachers commented on the "assessment to instruction" assignment. In this assignment, student teachers had to conduct an assessment with a student, interpret the results, and plan a one-on-one teaching lesson for the student. This assignment was designed to ensure that these future teachers understood the link between assessment and instruction as well as the importance of individual instruction. As this teacher commented:

My student teachers know more than I do about using assessment information. I know how to conduct the assessments and obtain fair results, but I wasn't taught as much about linking the assessment information to my instruction. I also never had the chance to work with individual students during my student teaching experience. It was all whole class instruction, often with my master teacher gone from the room.

The final assignment that was noted by teachers as related to student achievement was the case study. This was the final project that student teachers completed and required a focus on one of the most struggling readers in the class. It was quite involved, requiring a parent interview, multiple assessment instruments and administrations, several lesson plans based on the assessment information, and a list of recommendations for use at home and at school following the departure of the

student teacher. As one of the kindergarten teachers said, the case study “is like a complete educational work-up on a student.” Several teachers commented that this was a time-consuming project for the student teachers, but that it was probably the most important reason that the focus student for the case study improved. As one of the teachers commented during her interview:

We all learned a lot when the student teachers did the case study. I really like the fact that they can work one-on-one with their case study student every day. That really has made the difference for him. She [the student teacher] doesn't just sit down with him and do random work, she really knows what he needs and can provide it — almost with laser-like precision. I haven't seen a student with such trouble progress so much so fast in my 10 years as a teacher.

Our observations of and class meetings with the 20 student teachers confirmed that they relied heavily on their assessment data to make decisions about instruction. However, we observed student teachers on multiple occasions discussing the assessment data with their cooperating teachers. This was not reflected in the interviews. The teachers seemed to believe that the student teachers were completing their assignments and that these assignments contributed to student achievement. In sum, the cooperating teachers viewed the assignments from the university methods courses as relevant to their classrooms and designed in such a way that the student teachers focused on achievement. They suggested that this combination contributed to the increases in literacy achievement.

Cooperating Teachers' Roles and Responsibilities

A final theme to emerge from the interviews and confirmed by observation was the role of the cooperating teacher. During our initial meetings with the cooperating teachers, we stressed a “new model” of cooperating teacher in which the student teachers partnered with the current classroom teacher to provide instruction within the classroom. We discussed the drawbacks of the “replacement” model of student teaching in which the novice becomes fully responsible for the instruction of students. We also discussed the difference between first and second semester student teaching. Each of these students would complete a second semester of student teaching without a partner. During this second semester, they would spend considerably more time providing whole class instruction.

Approximately one-third of the teachers interviewed reported that this partnership was partly responsible for the improvement in student achievement. While they commented on the fact that there were more knowledgeable adults in the classroom, they also provided insights into the role of the cooperating teacher. As one of the first grade teachers said:

I've had 6 previous student teachers. I used to think that they would want some time alone to try things out, to test out the students without me hanging around, you know. I mean, my master teachers left me alone most of the time. Anyway, by

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staying in the room all the time I was able to provide a lot more feedback to my student teachers and really watch them develop their skills. Sometimes I would just sit in a guided reading or small math group and listen. After the group was done, we could take a few minutes to talk and reflect and my students got better instruction because of it.

Our observations confirmed the fact that cooperating teachers spent a great deal of time in the classrooms with their student teachers. While we observed, we noted a significant amount of partnership. The cooperating teachers and student teachers talked often and openly while we observed. The conversations mostly focused on lessons or activities and occasionally wandered into lunch and after school plans.

Discussion

It is true that the student teaching experience is not designed to bring free help into classrooms; nor is it the answer to increasing achievement in all schools. Student teaching should focus on the development of quality teachers who can create a classroom of their own. However, this study adds to the growing body of professional literature about the impact that PDSs can have (e.g., Cobb, 2000; Knight, Wiseman, & Cooner, 2000). It also mirrors the emphasis of the newly published Standards for Professional Development Schools, charging university-school partnerships with the task of increasing the learning of all the constituents of the community, including K-12 students (NCATE, 2001). Importantly, public school students in this study were not sacrificed while future teachers learned their craft. In fact, they benefited from the experience.

Nonetheless, the cooperating teachers did not explicitly name collaboration between the university and school as one of the reasons that student achievement increased. We believe that this is because these teachers had become very accustomed to the PDS partnership at the school, then in its third year. University methods professors, including the authors, are present on the school campus on a daily basis, and a culture of "transparent collaboration" has developed. The school staff are often consulted about matters regarding preservice teacher preparation and they are actively involved in teaching and mentoring these students even when not directly hosting a student teacher. Because this collaboration permeates the culture of the school, we believe that the teachers may have attended less to how collaboration resulted in increases in achievement when they could more easily attribute it to the intervention itself. In other words, the teachers may have attended more closely to the novel aspects of the dual student teacher placement model over the more subtle nature of the university-school partnership.

As teacher-educators, we were most pleased to learn that the methods class assignments were viewed as a tool for improving student achievement. Conventional wisdom in teacher education suggests making assignments relevant to the preservice teachers and the classrooms in which they complete their fieldwork.

Data from this study suggests that the assignments we require in our teacher education methods class may also impact public school student achievement. We would further suggest that our involvement with the school has influenced our practice through the design of these assignments. As we have come to know the teachers and children of this school community, we have tailored these projects to align with the unique aspects of the school. It seems reasonable to suggest that college faculty consider what the school has to offer as they plan their course syllabi.

Similarly, we noted the importance of the role of the cooperating teacher. Collaboration between preservice and inservice teachers was evidenced in the aforementioned quote “we did it together.” We believe that many of the cooperating teachers experienced a philosophical shift away from the traditional hierarchy of preservice teacher development. This finding is consistent with Bullough et al. (2002), who noted that cooperating teachers of student teacher pairs were more responsive, more flexible, and more likely to view their student teachers as peers than those with one student teacher in the room. Our classroom observations and the teacher interviews suggest to us that a new apprentice model is evolving at the school. This centuries-old system of learning a craft is predicated on the notion that apprentices are necessary to insure the success of the venture, and not simply to perpetuate the supply of future professionals. Likewise, these teachers came to view student teachers as an equally necessary element in providing responsive instruction for diverse learners. This change in student teachers’ roles represents a conceptual shift for many cooperating teachers who may have experienced a different model of induction. The level of investment in the success of both the preservice teachers and the children parallels the apprentice model because the master never loses sight of the constituency served and excellence is not compromised due to the presence of an apprentice. Rather, master and apprentice collaborate to provide the best level of service for the customers. One clear implication from this study is that cooperating teachers cannot function as they often have in the past — sitting back and allowing the student teacher time to “sink or swim.” As university educators, we must assume responsibility for ensuring that the cooperating teachers understand their role as partner-teacher and guide.

This shift to partner-teacher and guide necessitates a change in the expectations of teacher preparation programs. As with all such programs in our state, student teachers have the opportunity to complete two full semesters of student teaching. However, in the past the pace and tone of the semesters has suggested that the gold standard of teaching is whole group instruction, and that the measure of a good student teacher is his or her ability to administer to an entire class at once. We believe this has led to a misguided emphasis on group management at the expense of teaching and learning. While we would never argue that classroom management is not important, we also recall that wise practice and a large body of research have demonstrated that the heart of effective management is sound instruction (e.g., Marzano, Pickering, & Pollock, 2001; Wang, 1993-1994). Thus, we believe that

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student teachers need a solid grounding in what the process of teaching and learning looks like in order to manage effectively. Many of our previous student teachers have assumed responsibility for whole class instruction both semesters, and some fairly early within their first semester. As several of our interviewees noted, this does not allow for the student teacher to see learning really occur, as their attention is consumed by behavior monitoring. Without extended opportunities to witness student learning in small groups and one-on-one instruction, these preservice teachers may enter the profession without a deep understanding of the reciprocal nature of teaching and learning.

Our classroom observations suggest to us that the presence of two student teachers in a classroom allowed for a fundamental change in the way teaching was delivered. With two student teachers, the cooperating teachers were more likely to begin to implement small group reading instruction. These cooperating teachers reported that the extra knowledgeable adults provided them the confidence to establish the groups. Further, they reported that the presence of three adults made small group reading instruction the most logical arrangement. Besides benefiting students, the preservice teachers also profited from this decision. When student teachers can closely follow the progress of individual learners, they are able to analyze responses in an effort to understand the strategies students are using and confusing. This then allows for effective scaffolding of instruction. The depth of quality in the student teachers' case study assignments seems to bear this out.

Our final discussion point ranks as the most important, given the purpose of this study. Indeed, Teitel and Abdal-Haqq's (2000) conceptual framework for assessing the effectiveness of Professional Development Schools identifies K-12 student outcomes as a critical, yet often overlooked, dimension in the research. As established earlier, it is impossible to state unequivocally that the achievement of the kindergartners and first graders in the study was due solely to the presence of student teachers in their classrooms. In this multi-faceted PDS partnership, innovative practices in curriculum and instruction, family involvement, and professional development for experienced teachers and university partners are ongoing and dynamic. While it may be impossible to establish a causal relationship between the presence of preservice teachers and student achievement, it may be unnecessary as well. Clark (1999) states that these entanglements are to be expected in any inquiry of a PDS. "Good qualitative scholars seek to understand connections among the many variables present in a particular situation, just as good experimental researchers seek to understand the causes of a particular phenomenon... As one proceeds with evaluation, both qualitative and quantitative research skills can contribute..." (pp. 210-211). What is certain is that achievement rose significantly among public school students with access to student teachers when compared to classrooms taught by the teacher alone. By any measure, this is a meaningful benchmark for evaluating the benefits for the youngest stakeholders in a Professional Development School partnership.

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