Evidence-Sensitive Synthesis of Professional Development School Outcomes

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Abstract: This synthesis report describes a thorough analysis of primary professional development school (PDS) research in an effort to reveal reasonable PDS outcome claims as well as the strength of evidence that is in place to support these claims. The authors found reasonable evidence that support five claims: 1) PDS experiences encourage greater professional confidence in teaching candidates, 2) PDS experiences improve preservice teachers' perceptions of themselves as eventual professionals, 3) PDS experiences result in teaching candidates with more demonstrable teaching skills, 4) PDS experiences encourage improved quality and/or frequency of formative assessment for teaching candidates, and 5) PDS experiences improve host teachers' teaching practice. The authors also identify a list of emerging outcomes, a discussion of the nature of PDS interventions and research, and recommendations for improving the evidentiary quality of future PDS research.

KEYWORDS: PDS claims, PDS research, PDS research synthesis

NAPDS NINE ESSENTIALS ADDRESSED:

1. Engagement in and public sharing of the results of deliberate investigations of practice by respective participants

Introduction

The organization of a professional development school (PDS) partnership need not be complex. It may be as simple as striking an agreement between a school and a university. However, the potential advantages of such an arrangement, as evidenced by the work of hundreds of program advocates and researchers, are many and varied. Those who do work in PDS programs are surely encouraged by these potential advantages for all stakeholders (here to be referred to as PDS *outcomes*), but the effort of understanding their true nature has proven to be an elusive task.

The PDS concept, when compared to the waves of short-term education reforms that have

influenced schools and universities throughout the standards-based era, has a rich history and long-standing political support. These characteristics of the PDS movement have resulted in the wealth of literature that has been produced on the topic. Intervention descriptions, program evaluations, guides for implementation, calls for reform to include PDS designs, and historical accounts fill long lists of returns on PDS searches.

We find it interesting that the reality of each of these studied PDS programs is that each one has at its inception a decision. Decisions to formally involve K-12 schools in the effort of teacher preparation are made by legislatures, boards of education, administrators, teachers, and/or faculty. Although these decisions are influenced by historical momentum, programmatic familiarity, and political pressure, it is clear that there is a need for stakeholders to have direct access to empirical evidence of PDS outcomes. This need is particularly keen, not only because of the wealth of descriptive and anecdotal information that can serve to distort the truth that can be found in the available evidence, but also because the decision to embrace or reject a PDS design can carry the potential for great consequences in terms of both human and financial resources.

This pragmatic perspective led us to the synthesis that underlies this report. In a question: What empirical evidence exists that can inform stakeholders about professional development school outcomes, and what does this evidence reveal? In the pages to follow we describe a logistically simple yet arduous undertaking that led us to answers to this question.

Literature Review

Despite a wealth of professional development school (PDS) reviews in various forms, there are only two large-scale analytical syntheses that address PDS outcomes (Abdal-Haqq, 1998; Breault & Breault, 2012). Both of these works enlighten the nuances of PDS partnerships and their effects, both have informed our work significantly, and their combined efforts provide a foundation for our specific and unique approach to answering questions about PDS outcomes.

The first of these syntheses of PDS research is reported in Abdal-Haqq's *Professional Development Schools: Weighing the Evidence* (1998). Although the bulk of the text is devoted to describing the complex national landscape of PDS interventions, the author does provide a series of conclusions regarding program outcomes:

PDS programs are more likely to involve more field time and structure, employ school- based faculty, serve post-baccalaureate students, provide thorough support and feedback, evaluate pre-service teachers using a wide variety of assessment strategies, expose pre- service teachers to authentic classroom experiences, and are more likely to empower and encourage reflective practices (pp. 13-14).

Graduates of PDS programs are more likely to use a wider range of strategies, be more reflective, have a better sense of school logistics, be more confident in their roles and in teaching diverse learners, and have lower attrition rates (p. 15).

Classroom teachers in PDS roles are more likely to take instructional risks, be more intellectually stimulated, experience professional growth, feel less isolated and powerless, make improvements to their own practice, and more likely to experience a sense of professionalism (p. 24).

It is important to note that Abdal-Haqq did not systematically analyze the evidence used as

the basis for these conclusions, and that most of the specific conclusions are based on few primary studies.

The idea that empirical quality should be considered in determining the overall weight of evidence was of far greater emphasis in Breault and Breault's *Professional Development Schools: Researching Lessons from the Field* (2012). After an initial screening to determine which of the 300 studies the authors uncovered met their criteria for "research," they coded each in terms of methodological strength ("strong," "acceptable," or "weak") and validity of conclusions ("valid" or "invalid"). However, as the authors note, the scope of their work did not extend to an analysis of primary research quality beyond a "basic level" (p. 51).

The authors distilled their concerns about PDS research into four conclusions: 1) PDS endeavors cannot be largely justified by the available research, 2) claims put forth in many primary PDS studies are unsupported, 3) student achievement outcomes are particularly under-examined, and 4) the perspectives of many important stakeholders have been underrepresented. In short, these authors brought to light the poor quality of the majority of existing PDS research, and they determined that none of the list of positive outcomes identified by Abdal-Haqq can be supported by this body of work.

The synthesis to follow differs from these previous efforts in two important respects. First, we concerned ourselves with the specific nature of each of the primary research reports that we believed could provide PDS outcome claim support. Before drawing conclusions we started by carefully dissecting each of the primary studies to gain a sense of empirical strength. We then based our claims on the evidence that resulted for our process while, at the same time, disregarding large amounts of poor-quality evidence that characterizes the PDS research landscape. The wealth of descriptive and anecdotal PDS documents, in our opinion, is indicative of the longevity and popularity of the PDS movement, but is not pertinent to a discussion about the claims that can be supported by the stronger evidence that is found among this mass.

Second, in this report we will not go so far as to make decisions for stakeholders. Because these decisions need to be weighed against varying degrees of resistance, we sought an approach to reporting claims that would be most useful for our readers. Specifically, outcomes that are supported by multiple sources of evidence are presented along with the supporting evidence citations, short descriptions of these studies, and an evidentiary quality indicator. Each reader is left to determine whether the evidence before them satisfies their particular need for empirical strength.

Methodology

There were three overlapping phases within this synthesis project. Our Phase I was characterized by the retrieving of evidence from primary research sources, a process which extended 19 months into our work (October 1, 2013 to April 30, 2105). As primary research sources began to be revealed, we set into our Phase II which was characterized by the inclusion and coding processes. As noted in the previous section, this phase makes the current synthesis unique in that the specific quality of available evidence was used as eventual basis for claims. A year into the process, in October 2014, we began our Phase III which was to synthesize the results. The results of this last phase produce the claims and recommendations that comprise the closing section of this report.

Phase I: The Search for Evidence

A broad internet search characterizes our initial attempts to identify relevant research reports. The search platforms of the Education Resources Information Center (ERIC), Google Scholar, and Power Search were employed using these phrases: "Professional Development Schools," "Professional Development School Partnerships," "Impact of Professional Development Schools," "Measuring the Achievement of Professional Development Schools," "Analysis of Professional Development Schools," "PDS," "PDS Partnerships," "Do Professional Development Schools (PDSs) Make a Difference?," "The Impact of a Professional Development Schools," "Effectiveness of Professional Development Schools," "Professional Development School Comparisons," and "Professional Development Schools PDS and Student Achievement." The titles and abstracts of the first 100 or more results from each search were used to determine whether or not each report was to be included in Phase II.

Phase I continued well into the timeframe of Phase II. As reports were coded, the reference lists of these studies were cross-referenced for possible study inclusion in our synthesis. We also presented our synthesis process and preliminary results, respectively, at two national Professional Development Schools Conferences (Las Vegas in March 2014 and Atlanta in March 2015) where requests for relevant citations were solicited. Identified report citations were then subjected to the same Phase I and cross-referencing processes.

More than 5,000 studies were considered for inclusion as a result of our Phase I process.

Phase II: Inclusion and Coding

It was determined that research reports would be subjected to our Phase II analysis if they met two criteria. First, the intervention studied in the reported research needed to be a PDS intervention. This identification was communicated through the research report either explicitly (the researchers identified the intervention as a "PDS" or "professional development school" intervention) or implicitly (the described intervention included at least five of the nine essential PDS characteristics identified by the National Association for Professional Development Schools (NAPDS)). A list and description of these essential characteristics can be found on the NAPDS website (napds.org).

The second inclusion criteria required some evidence of intervention outcome. A study of the growth dynamics of a particular PDS program, for example, would not necessarily include outcome measures. Note that such a study could be of great interest to stakeholders, and it could report a wealth of empirical evidence, but it would not help us to answer our research question.

Once it was determined that a given research report met our inclusion criteria, then it was selected for inclusion, the full text of that report was obtained, and the report was subjected to coding. Using a coding instrument adapted from the work of Barley et al. (2002), 102 studies were coded for this synthesis. As the coding process began, it was determined that 20 of the included studies did not, as it turned out, meet the inclusion criteria, so coding on these studies was aborted. Each of the 82 studies that remained was subjected to the complete coding process.

The coding process began with a thorough descriptive section in which 40 contextual, intervention, and study characteristics were identified. Among these characteristics were school/university descriptors, subject group demographics, content foci, pedagogical strategies leveraged, PDS intervention descriptors, study duration, study group assignment protocol, levels

of subject attrition, and outcome information (including effect sizes, when available). The complete coding instrument is available through the NAPDS website (napds.org).

Following this descriptive coding, each study was subjected to an evidence coding process to determine a quantitative and/or qualitative Empirical Evidence Strength Rating (EESR). The quantitative EESR is a numeric score based on the cumulative score across eight design and reporting metrics. Using adapted quality descriptors and the same cutoffs employed by Barley at al. (2002), studies were rated as "High," "Medium," or "Low" in evidentiary quality. Generally, studies earning High EESR scores included a strong combination of these design characteristics: the intervention and outcomes were properly defined, steps to insure fidelity were described and employed, the PDS intervention was largely protected from bias and contamination, the study employed appropriate sampling of groups and subgroups, and the statistical analyses were appropriate and carefully reported. This coding rubric is available through the NAPDS website (napds.org) as a part of the coding instrument described above.

Similarly, the qualitative EESR is a numeric score based on the cumulative score across ten design and reporting metrics. Again, using quality descriptors and cutoffs employed by Barley et al. (2002), studies were rated as "High," "Medium," or "Low." Studies that emerged with High qualitative EESR ratings were those that described and leveraged mechanisms to both confirm results and search for disconfirming evidence, studies that carefully avoided researcher effects, studies in which construct validity was established and described, and studies in which claims of generalizability and convergence of results were carefully established. This rubric is also available through the NAPDS website (napds.org) as a part of the coding instrument described above.

Having described what the EESR is, it is important for the reader to also understand what it is not. The EESR is not an indication of report quality. In fact, given the nature of educational programming of any kind, it is reasonable to expect researchers to give emphasis to descriptive and evaluative efforts while attending less to the potential for supporting generalized claims. The EESR is merely an indication of the generalizability of the evidence presented in a report while the report itself may not have been written with these ends in mind.

Phase III: The Synthesis Process

The quantitative aspect of our synthesis phase would have been to conduct a meta-analysis of primary study outcomes. As we report in the next section, however, the available research does not support such an approach, so a description of this process is not warranted here.

The qualitative aspect of this phase (and what turned out to be our sole synthesis mechanism) was to allow the High EESR studies to define a set of outcome claims, and then to also consider the degree to which any Medium EESR studies supported these claims. This interpretative approach (also similar to the approach used by Barley et al., 2002) yielded a rich set of results that are presented as a list of potential PDS claims in the section to follow.

Results

As noted in the previous section, 82 professional development school (PDS) studies were fully coded for this synthesis. A cursory set of descriptors of each of these studies is presented in Table 1. The reader should note that, despite its large size, this table is only portion of a much larger searchable and sortable spreadsheet (82 by 74) of study descriptors that is available for download through the NAPDS website (napds.org).

Table 1: Studies of Professional Development School (PDS) Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Armstrong, Rudolph, & Austin	2011	L	M	22/3	The authors report that a PDS program encouraged ongoing growth in the partner teacher education program.
Bennett	2011		M	62	The author identifies the use of weekly morning seminars as an important mechanism through which PDS interventions can be enhanced.
Blocker & Mantle-Bromley	1997		H	42	The authors report that PDS preservice teachers were more satisfied with their preparation, and were more enthusiastic about their preparation, experiences, and resulting confidence.
Brindley et al.	2008		M	86	The authors identify the use of internship placements as an important mechanism through which PDS interventions can be enhanced.
Bullough et al.	2002		M	39	A PDS program is reported to produce positive benefits for preservice teachers, host teachers, and classroom students.
Bullough et al.	1997		M	7 schools	Teachers who became openly engaged in the PDS process are reported to be more reflective, and described increases in personal and professional growth.
Carpenter & Sherretz	2012		M	1 school	PDS partnerships are reported to allow host teachers to assume more leadership functions in regard to developing the school as a learning organization, and they are reported to allow more opportunities to participate in seminars, problem solving groups, reflection, inquiry and skill development activities.
Castle, Arends, & Rockwood	2008	M		2 schools	A PDS intervention is reported to move more classroom students to mastery when compared to the control schools.
Castle, Fox, & Fuhrman	2009	M	H	171	Quantitative analysis revealed significant improvement in PDS candidates' time management skills, depth and integration in their reflection on teaching, and their willingness to discuss integrated assessments.
Castle, Fox, & Souder	2005	L	H	91	PDS candidates are reported to perform better on aspects of instruction, management, and assessment. PDS candidates are also reported to be more focused on their students and student performance, and are reported to have a broader experience base.
Castle, Rockwood, & Tortora	2008	M		21	The authors report that a PDS program encourages the use of new pedagogical approaches and it better supports student learning.
Catelli	2012	L		18	PDS student teachers are reported to show an increase in the percentage of time devoted to substantive pupil and teacher behaviors.
Cobb	2000	L		35	Host teachers report that PDS graduates had a higher level of preparedness as compared to non-PDS graduates, and that the impact of the PDS program is favorable in a variety of other ways.
Cobb	2001	L		35	PDS graduates are reported to believe that their principals and colleagues view them as agents of reform.
Conaway & Mitchell	2004		H	58	PDS preservice teachers report more independence and responsibility for implementing instructional decisions as well as greater collaboration with school personnel. They also agreed that they were more confident of their abilities and that the PDS program provided a more realistic experience.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Table 1 (continued): Studies of PDS Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Cosenza	2013		M	22	Stakeholders emphasized the collaborative culture of the PDS environment as a critical component in producing teachers with leadership potential.
Cuddapah et al.	2008	L		17	The authors report that PDS student teachers had higher attendance rates, improved GPAs, and were better prepared to enter the high school environment as effective teachers.
Czaja et al.	1998	L		684	PDS teachers who had mentoring experience are reported to have a greater focus on continual improvement. Authors also report that mentoring opportunities are affiliated with positive views of collegiality, recognition, autonomy, and an improved outlook.
Damore, Kapustka, & McDevitt	2011	L	M	82	The authors report that an urban PDS model begins to satisfy national recommendations for high-quality preparation of future teachers through providing a more meaningful experience, better preparation, increased opportunities, improved mentoring, and connections between coursework and the classroom.
Dangel & Hooper	2010		M	6	The authors identify the use of constructivist approaches as an important mechanism through which PDS interventions can be enhanced.
Duffield	2005		H	17	PDS candidates are reported to experience formation of strong, positive relationships with students and teachers. Additionally, PDS classrooms are reported to allow candidates to move beyond focusing on procedural aspects and think more about methodology.
Duffield	2006		M	17	The author reports that quality in relationships between preservice teachers and host teachers was the most influential factor in PDS preservice teachers' perceptions of fieldwork experiences.
Duquette & Cook	1999		M	23	Preservice teachers reported they learned about curriculum, pupils, discipline and the teaching profession, but they did not attribute the areas of growth directly to the PDS intervention.
Edens, Shirley, & Toner	2001		M	75	The authors report that a variety of PDS school and university staff viewed enhanced professionalism and networking as primary advantages of the intervention.
Fisher, Frey, & Farnan	2004	M		485	The authors report that scores were significantly higher for students in classrooms with PDS student teachers compared to classrooms without.
Flynn	2001		M	6	PDS graduates consistently reported a high quality of mentoring, excellent models of teaching, involvement in the entire school, connections between coursework and the classroom, and the support of the cohort structure as elements contributing to better teacher preparation.
Foster & Loving	2000		M	3	The authors identify the presence of principal support as an important mechanism through which PDS interventions can be enhanced.
Frampton, Vaughn, & Didelot	2003	L		87	The teachers surveyed report that their PDS partnerships have improved the practice of preservice teachers.
Gajada & Cravedi	2012		M	130	The authors report that a PDS program effectively addresses the professional development needs of both veteran and novice teachers.
Galassi et al.	2001	L	M	110	The authors describe ways in which PDS involvement both positively and negatively impacts stakeholders' perceptions of collaborative research.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Table 1 (continued): Studies of PDS Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Gimbert & Nolan	2003		M	7	The authors report that effectiveness of the university supervisor has increased as a result of a PDS intervention.
Heafner & Spooner	2008	L	M	126	The authors report that a PDS tutoring program helped increase individual student success, self-regulation, and self-efficacy.
Higgins	2002		H	13	The author reports that, as a result of PDS programming, university partners have a greater understanding of the work teachers do, that teachers were involved in more meaningful reflection on all aspects of instruction, that preservice teachers observed more merging of methods and practice, and that students received more attention.
Hopkins, Hoffman, & Moss	1997	L		64	The presence of stress, as well as preservice teachers' ability to cope with the stressors, is reported to have increased for both PDS and non-PDS participants. No between-group differences were identified with respect to these metrics.
Jorissen	2002		M	7	Characteristics including enhanced mentoring support, eventual professional integration, and teacher retention are reported as benefits of a year-long, cohort program for preservice teachers.
Klingner et al.	2004	L	M	948/47	The authors report that improved academic outcomes, and social and affective benefits, can be attributed to a PDS intervention.
Knight, Wiseman, & Cooner	2000	L	H	1,034	The authors report that PDS activities resulted in higher student writing scores, as well as increased achievement in writing and mathematics problem solving.
Kroll et al.	1997		H	17	PDS host teachers are reported to have experienced greater professional growth. PDS preservice teachers are reported feeling as though they were treated more professionally and were an integral part of the host school staff.
Latham & Vogt	2007	M		1,065	The authors report that PDSs significantly and positively affected how long teachers remained in the profession.
Latham & Wedwick	2009		M	203	PDS preservice teachers are reported to be more career-oriented and to place a higher priority on preparedness than their non-PDS counterparts.
Levin & Rock	2003		M	5	Adding an action research component to a PDS experience is reported to increase the effectiveness of the experience.
Long & Morrow	1995	M	M	32	No significant differences were found between PDS candidates and the control group on the National Teachers Exam, examination of portfolios, and an extensive questionnaire. The authors do report, however, that PDS preservice teachers were found to be significantly more positive toward inclusion, better prepared for their first year of teaching, and to be in possession of greater self-confidence.
Marchant	2002	M		60 schools	The author reports no significant differences between PDS and non-PDS sites on any of the indicators of student achievement.
McKinney et al.	2007	L		59	The authors report no significant difference between pre- and post-test scores on urban teacher preparation across PDS and traditional programs.
Mebane & Galassi	2000	M	M	66	Overall satisfaction with aspects of PDS involvement is reported to outweigh levels of dissatisfaction.
Mebane & Galassi	2003	M		68	The authors identify inquiry and study groups as important mechanisms through which PDS interventions can be enhanced.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Table 1 (continued): Studies of PDS Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Mitchel & Hindin	2008	L	M	43	The authors report that a greater percentage of PDS preservice teachers embedded their lessons with meaningful context, they were more prone to activate prior knowledge, and they showed a greater degree of focus on students as learners. A greater level of support from cooperating teachers was also reported, but no significant difference was found with regard to preservice teachers' perceptions with regard to pursuing a teaching career, the types of feedback they received, and how well they thought a methods class prepared them for teaching.
Mule	2005		M	5	The author reports that engaging inquiry in PDS settings may better challenge preconceived notions about teaching and may encourage more depth of reflection.
Neapolitan et al.	2008		M	46	The authors report that teachers prepared in PDS programs were more likely to remain in the profession, were more likely to give focus to reflection and thoughtfulness in planning and assessment, and were more likely to be confident in their abilities. The authors also report that there was no difference between the PDS and non-PDS groups' beliefs about their teaching effectiveness.
Paese	2012	M		48	The author reports increased role preparedness and efficacy as a result of preservice teachers' PDS involvement.
Pohan et al.	2009	M		96	PDS preservice teachers are reported to be more culturally responsive as a result of participation in an urban school placement.
Polizzi	2009		M	14	Preservice teachers are reported to experience personal and professional growth as a result of a full-immersion PDS program.
Reinhartz & Stetson	1999		M	31	The authors report that teachers trained in PDS programs felt they had an advantage over their counterparts and rated themselves better in terms of classroom management, effectiveness of instruction, and leadership skills and abilities. It is also reported that principals felt PDS teachers were more confident and knowledgeable.
Reynolds, Ross, & Rakow	2002	M	M	80	PDS program participants are reported to be better prepared, but quantitative analyses reveal no significant differences on measures of school culture or teacher proficiency.
Reynolds & Wang	2005	M		511	Two of the four PDS partnerships studied showed a higher percentage of PDS graduates remaining in the teaching profession.
Rice et al.	2011		L	85	The authors report that PDS programming resulted in positive learning outcomes for graduate-level preservice teachers.
Ridley, Hackett et al.	2005	L		<98	Teachers prepared in a PDS program were reported to be more effective at getting and holding student attention, communicating lesson objectives, connecting a lesson to prior knowledge, and providing instruction in an engaging manner.
Ridley, Hurwitz et al.	2005	M		51	The authors report that, during the first year of teaching, PDS graduates were superior to campus-prepared graduates in lesson planning, teaching effectiveness, and reflection.
Rieckhoff & Larsen	2012	L	M	<268	The authors report that a PDS partnership has a positive impact on leadership development.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Table 1 (continued): Studies of PDS Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Sandholtz & Dadlez	2000	M	H	249	The authors report that PDS student teachers had a more supportive and authentic student teaching experience.
Sandholtz & Wasserman	2001	M	H	59	The authors report that collaborative work with university partners offered added opportunities for host teachers to enhance their teaching. PDS teaching candidates noted improved opportunities including availability of the supervisor, a large support system, and more constructive feedback.
Scheetz et al.	2005		L	25	The authors report that being a host teacher in a PDS program was a professionally rewarding experience.
Shroyer et al.	2010	L	M	3 districts	The authors identify the use of student-centered resource allocation as an important mechanism through which PDS interventions can be enhanced.
Snow-Gerono	2005		M	>3	The author reports that a PDS program encouraged learning communities in absence of formal professional learning communities.
Stairs	2011		H	55	An urban PDS is reported to help recruit and prepare future urban teachers, and to help shift stereotypes about teaching in urban schools.
Stallings	1991	M	H	69	PDS preservice teachers are reported to successfully teach multi-cultural at-risk children, and most of these preservice teachers are reported to welcome future opportunities in the same environment.
Stallings & Kowalski	2011	M		62	PDS student teachers are reported to develop and maintain more effective instructional strategies than teachers prepared in a traditional setting.
Stanulis	1995		M	5	The author identifies a host teacher's ability to develop and maintain collaborative relationships as an important component of successful PDS programming.
Stroble & Luka	1999		L	17	The authors identify a host of advantages inherent in PDS programs as reported by school and university administrators.
Teitel	1997		M	3 programs	The author reports on the simultaneous renewal of institutions involved in long-term PDS programs.
Theiss & Grigsby	2010	L	M	136	The authors report that preservice teachers in a PDS program were advancing on a variety of standard certification metrics.
Tilford	2010		L	3	The author identifies particular host principal characteristics that are conducive to successful PDS.
Vare & Young	2007	L		1,704	The authors report that the quality of host teacher supervision improves as a result of communities of inquiry such as that provided by a PDS program.
Voltz	2001		M	24	The author reports that PDS interventions enhanced special education teachers' professional growth.
vonEschen bach & Gile	2007	L		250	This report supports the notion that PDS programs encourage alignment between schools and universities with regard to dispositional expectations.
Wait & Warren	2001	L		16	The authors report that teachers trained in a PDS program displayed better classroom management skills.
Walling & Lewis	2012		M	26	The authors report that PDS experiences encourage more mature professional beliefs and attitudes in preservice teachers.
Walmsley et al.	2007	L	M	48	The authors report that PDS preservice teachers improved markedly in terms of both knowledge and pedagogy within the context of addressing the needs of students with disabilities.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Table 1 (continued): Studies of PDS Intervention Outcomes

author(s)	year	quant EESR[a]	qual EESR[b]	sample n	outcome description
Willhite, McIntyre & Willhite	2008	L		26	The authors report that student teachers in a PDS program acquired more teaching experience than their traditional program counterparts.
Yendole-Silva & Dana	2004		H	6	The authors report that, as host teachers progressed into the PDS partnership, they became more effective decision-makers and teacher educators.
Yerian & Grossman	1997	M	H	74	The middle school PDS model is reported to have a positive effect on attitudes toward the practice and growth of preservice teachers.
Yssel, Koch, & Merbler	2010	L		45	The authors report that PDS programming is not resolving reluctance on the part of special education faculty to embrace PDS models.

[a] Quantitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)
[b] Qualitative Empirical Evidence Strength Rating (L = low, M = medium, and H = high)

Careful analysis of Table 1 will reveal that none of the studies were coded as having High quantitative EESRs, 19 were rated as having Medium quantitative EESRs, and 26 were rated as having Low quantitative EESRs. In terms of qualitative methodologies, 14 of the studies we coded were rated as having High EESRs, 39 as having Medium EESRs, and 4 as having Low EESRs. Analysis will also reveal that 20 of the studies employed both quantitative and qualitative methodologies and were, therefore, coded as such and given EESR ratings in both methodological categories.

Claims

Support for claims of positive outcomes for PDS interventions clearly exists. We have identified 64 studies with High and/or Medium EESRs that will be used here to support specific claims regarding PDS outcomes. As noted, we cannot determine whether the strength of these claims will satisfy the empirical needs of program advocates, so we expect that decisions will be made while weighing the available evidence against the scope of the programmatic effort at hand. While these decisions are left to others, we present here our best effort at a compilation of the empirically strong evidence needed to make these decisions valid.

Under the headings to follow, a series of five PDS outcome claims are presented. Effort has been made to present the claims in order based on strength of support with the most heavily supported claim being presented first. Within each claim, the High EESR studies are presented first followed by the Medium EESR studies. Since multiple studies were to be presented in each given group, it was determined that the studies should be presented in chronological order in an effort to preserve any indication of evolution in empirical understanding that may be present.

Claim #1: PDS experiences encourage greater professional confidence in teaching candidates.

Six High qualitative EESR studies support this claim. Although some of the reported effects are mitigated by programmatic design elements such as self-selection to PDS interventions, and confounded by the often subtle differences between PDS interventions and

traditional student teaching experiences, these studies enlighten important aspects of PDS interventions that are not only unique to such experiences, but also have clear potential to encourage the candidate confidence at the heart of the claim.

Of these six High EESR studies, the earliest is the report of an interview-based study authored by Blocker and Mantle-Bromley (1997). In this study of 42 subjects the authors report that those who had chosen the PDS program option described themselves as being more confident in their teaching preparation and skills. Similar levels of confidence, this time in terms of perceptions of thorough preparation, were evidenced by Yerian and Grossman (1997) in their longitudinal middle-school study which included 74 teaching candidate subjects. The third study, an ethnographic study by Higgins (2002), describes professional confidence in larger terms as the self-perceived professional growth of 13 teaching candidate subjects. Conaway and Mitchell (2004), in a longitudinal study involving 57 subjects, report that the PDS-prepared candidates were more confident in their teaching abilities and, in another longitudinal study, Duffield (2005) reported that 18 subjects felt more confident in terms of a stronger willingness to apply instructional methodologies. The sixth of these High EESR studies is a more recent work by Stairs (2011) in which the author analyzes a variety of evidence provided by 55 teaching candidates involved in an urban PDS program. The candidates reported not only feeling more prepared to teach in urban classrooms, but also more willing to consider teaching in an urban classroom as a career choice.

This claim of increased confidence is also supported by six Medium EESR studies. The earliest of these is a mixed-methods study by Long and Morrow (1995) in which the authors report the studied PDS preservice teachers to be significantly more positive toward inclusion and to be in possession of greater self-confidence. Also placed among these studies is the quantitative portion of the Yerian and Grossman (1997) study described above. The authors' analyses of preservice teacher questionnaire responses further support the current claim of increased confidence. In another Medium EESR study, a qualitative study by Reinhartz and Stetson (1999), the authors report that the 12 PDS-trained teachers surveyed rated themselves higher than did their counterparts in confidence in terms of self-reported instructional effectiveness, classroom management, and leadership skills. The notion that self-reported perceptions of teaching ability are indications of professional confidence also led us to consider a mixed-methods study by Reynolds, Ross, and Rakow (2002) in support of this claim. In this interview and survey study that was given a Medium EESR rating for both its quantitative and qualitative methodologies the authors report that 18 PDS-prepared teachers rated their teaching effectiveness higher than did their non-PDS counterparts. Two additional Medium EESR qualitative studies support this first claim. Gajda and Crevedi (2006) report that teaching candidates with access to practicing teachers as a part of a PDS methods course left them feeling more prepared to enter the profession. And lastly, also in a study of methods course students, Mitchel and Hindin (2008) report that 24 PDS program students left the course feeling better prepared to teach than did the 19 who were enrolled in a traditional methods course.

Claim #2: PDS experiences improve preservice teachers' perceptions of themselves as eventual professionals.

Five studies that scored High qualitative EESRs support this claim. The first of these is an early mixed-methods study (scored also as Medium quantitative EESR) by Stallings (1991) in

which the author reports on the outcomes experienced by 44 PDS student teachers. Over three years the author generated data through classroom observation, interviews, and ethnographic records. The results suggest that PDS preservice teachers are more likely to use academic and clarifying statements, and they are more likely to employ comments of praise and support in their teaching. The Blocker and Mantle-Bromley (1997) study, and the Yerian and Grossman (1997) study, both used to support Claim #1, can also be used here. Blocker and Mantle-Bromley report that PDS candidates see themselves as having increased responsibility and as having more extensive interactions with students. As a result of their PDS program, the preservice teachers in Yerian and Grossman's (1997) study felt better prepared for middle school instruction in terms of early adolescent knowledge and working with students who have disabilities. The fourth study employed interviews and surveys with more than a hundred PDS preservice teachers over a four year period. Here Sandholtz and Dadlez (2000) report that the subjects felt more prepared for the transition into full-time teaching as a result of their PDS experiences. The fifth and most recent High EESR study that supports this claim and also cited in support of Claim #1. In this study, the work of Conaway and Mitchell (2004), the authors report that PDS interns see themselves as having a greater degree of independence and responsibility for implementing decisions.

A set of four Medium EESR studies were also found to support this claim. The first of these is the study by Long and Morrow (1995) that was used in support of Claim #1. In addition to the claims of increased confidence reported above, the authors also indicate that PDS preservice teachers felt better prepared for their first year of teaching when compared to a control group. The Mitchel and Hindin (2008) study (again described above in support of Claim #1) can also be used to support the current claim. These authors report that the studied preservice teachers felt positive about pursuing a teaching career, and they note that the preservice teachers reported that the methods courses were instrumental in preparing them to teach. A qualitative study by Latham and Wedwick (2009) also reported similar results. In this study 51 PDS preservice teachers the subjects reported more interest in establishing their own professional preparedness. In another study by Polizzi (2009), this one a study of 14 PDS preservice teachers, the author reports that the subjects experienced "a significant transformational impact in their personal and professional grounding as future career educators" (p 98).

Claim #3: PDS experiences result in teaching candidates with more demonstrable teaching skills.

There are four High EESR studies that can be used to support this claim. The first is the large- scale longitudinal work of Stallings (1991) reported in support of Claim #2. In addition to the conclusions reported above, the author also provides qualitative evidence to support the notion that students trained in PDS were more successful in teaching multi-cultural and at-risk students. In the second study that supports this claim, the Blocker and Mantle-Bromley (1997) study cited in support of the first two claims, the authors reveal that PDS preservice teachers also reported greater involvement with the role of being a teacher. We also include in this group a mixed- methods study by Castle, Fox, and Souder (2006). In this study data was collected using student teaching evaluation forms, video recordings, and student teaching portfolios. The authors report that PDS preservice teachers performed better on aspects of instruction, management, and assessment. Finally, in another mixed-methods study, Castle, Fox, and Fuhrman (2009), the authors report that PDS preservice teachers had better time management skills and demonstrated

greater depth in reflection.

In discussing the Medium EESR studies that speak to this claim, it is important to note that disconfirming evidence exists. For example, the Long and Morrow (1995) study, a mixed-methods study cited in support both of the previous claims, reported no statistical difference between the PDS and non-PDS preservice teachers on a series of quantitative measures: National Teacher Exam marks, scored portfolios, and the results of a questionnaire. Also note that in the mixed-methods study by Reynolds, Ross, and Rakow (2002), used as support of Claim #1, the authors report that, although the PDS preservice teachers in the study claimed to be better prepared, their perception was not supported by the authors' quantitative analyses. The authors report no significant difference between the PDS and non-PDS subjects on measures of teaching proficiency.

Six other Medium EESR studies do, however, offer support of the current claim. A qualitative study by Bullough et al. (2002) reports that children assigned to PDS student teachers were better served than were their counterparts. Walmsley, Bufkin, Rule, and Lewis (2007), in a mixed- methods study of PDS preservice teachers who were working with disabled students, report that their student teaching subjects improved markedly in terms of both professional knowledge and pedagogy. The Mitchell and Hindin (2008) study used to support Claims #1 and #2 can also be used here because the authors report that a greater percentage of PDS preservice teachers embedded their lessons with meaningful context, they were more prone to activate prior knowledge, and they showed a greater degree of focus on students as learners. The results of a quantitative study by Pohan, Ward, Kouzekanani, and Boatright (2009) support a slightly more specific claim that PDS-trained preservice teachers from urban sites were determined to be more culturally responsive. In the fifth study of this group, a mixed-methods study of 73 subjects, Theiss andGrigsby (2010) report that PDS preservice teachers were advancing more quickly on a variety of standard certification metrics. Finally, Stallings and Kowalski (2011) provide quantitative data from a variety of sources to support their claim that the PDS preservice teachers are more likely to develop and maintain effective instructional strategies.

Claim #4: PDS experiences encourage improved quality and/or frequency of formative assessment for teaching candidates.

We hesitated to include this as a claim of a PDS "outcome." At face value, increasing the quality and frequency of preservice teacher assessments appear to be programmatic choices that could be made independent of the choice to employ a PDS design. Further, this particular outcome may be better described as a PDS programmatic characteristic (an input) that is in small or large part responsible for other observed outcomes. Despite these concerns, however, we have been encouraged by the authors of studies listed below to include this claim. It appears there is reason to believe that the quality and frequency of feedback is an inherent quality of PDS interventions that may be in and of itself an outcome desired by designers of future programs.

There are four High qualitative EESR studies that support this claim. The first of these is the mixed-methods study by Sandholtz and Dadlez (2000) cited in support of Claim #2. Relevant here is the authors' report of an increase in support and encouragement of preservice teachers as a result of the PDS program. In another mixed-methods study, Sandhotz and Wasserman (2001) describe program design characteristics that encourage preservice teacher support, and go on to identify increased access to supervisors as a PDS outcome embraced by study subjects. The

Conaway and Mitchell (2004) study, described in support of Claims #1 and #2, also supports this claim in that the preservice teachers in the study identified professional support as a welcomed advantage of their PDS experience. Similarly, the study by Castle et al. (2009) described in support of Claim #3 also provides evidence that the preservice teachers in the studied program received increased supervision and feedback within the PDS structure.

Two Medium EESR studies can also be cited in support of this claim. The authors of the Bullough et al. (2002) study cited in support of Claim #3 also report that PDS preservice teachers felt better supported with their programs. The second is a case study by Gimbert and Nolan (2003) which not only describes the changing dynamics of the preservice teacher's supervision throughout a year-long placement, but also the flexibility of support structures afforded by the PDS program.

Claim #5: PDS experiences improve host teachers' teaching practice.

There are two High EESR studies that support this claim. Higgins (2002), in a naturalistic inquiry study used to support Claim #1, describes the rich and positive effects that PDS can have on host teachers in terms of their own teaching practice. The second study is an ethnography by Yendol-Silva and Dana (2004). In this 18-month study of six PDS host teachers, the subjects reported that their struggle to support and prepare preservice teachers was impetus for their own professional growth.

Six Medium EESR studies were found to support this claim. In the earliest of these, Bullough, Kauchak, Crow, Hobbs, and Stokes (1997) report that the host teachers were encouraged to think more deeply about their practice as a result of PDS programming. In another qualitative study, this one by Edens, Shirley, and Toner (2001), the authors report that host teachers viewed enhanced professionalism as a primary advantage of their PDS experiences. After analyses of interview data from 24 special education teachers, Voltz (2001) reports that PDS interventions enhanced these teachers' professional growth. The Gajda and Crevedi (2012) study used in support of Claim #1 also serves to support the current claim. These authors report that the studied PDS program was professionally revitalizing and enhanced the practice of the host teachers. In another study, the qualitative work of Carpenter and Sherretz (2012), it was the leadership opportunities provided for host teachers in a PDS program that was the focus. The authors of this study conclude that these leadership opportunities were likely to enhance the quality of the host teacher's practice. Lastly, Cosenza (2013) employed qualitative methods to come to a similar conclusion. This author suggests that the studied PDS program encouraged leadership potential in host teachers because of the resulting collaborative culture.

Emerging Claims

There are three other claims that are supported by High and Medium EESR studies. Since, in each of these cases, the claims were defined by only a single High EESR, we were reluctant to treat them with the same level of formality extended to the claims above. Not wanting to exclude them altogether, we instead suggest that these are claims which appear to be emerging from the complex reality of PDS research. Note that for each claim the High EESR study is listed first, and the Medium EESR studies are listed thereafter in chronological order.

Claim: **Those with PDS program experience make better teachers.** This claim is supported by evidence found in Stallings (1991); Reinhartz and Stetson (1999); Flynn (2001); Ridley, Hurwitz, Hackett, and Miller (2005); and Neapolitan et al. (2008).

Claim: **K-12 students demonstrate higher achievement within PDS programming.** This claim is supported by evidence found in Knight, Wiseman, and Cooner (2000); Marchant (2002); Fisher, Frey, and Farnan (2004); Klingner, Leftwich, van Garderen, and Hernandez (2004); Castle, Arends, and Rockwood (2008); and Heafner and Spooner (2008).

Claim: **PDS experiences encourage improved quality of college/university courses.** This claim is supported by evidence found in Higgins (2002); Mitchel and Hindin (2008); Armstrong, Rudolph, and Austin (2011); and Damore, Kapustka, and McDevitt (2011).

Future Research

Two broad conclusions can be drawn with regard to the landscape of professional development school (PDS) research as a result of this synthesis effort. The first of these is that there is a large body of PDS research available to us all. The second and more important conclusion is that, despite this large body of research, making a new and significant contribution to the body of empirical PDS research would not be a difficult task. PDS programming is a complex undertaking. Each of the studies described herein provides another piece of clarity in any effort to understand this complexity, but also raises new questions. Although we are largely echoing the pleas of previous PDS researchers, here are some recommendations in the direction and nature of future PDS study.

Not unexpectedly, we join others in a call for further quantitative research of PDS programs. Such research can not only support objective claims, but can also be used as a basis for meta- analyses. The results of these studies would be limited in their ability to communicate the rich complexities of PDS programming, but they are a necessary component in the answer to any question about the need for the effort and expense that often accompany PDS designs.

Researchers may also wish to consider isolating PDS-specific design features. For example, a study of a PDS-intervention that is a part of a teaching methods course may be more revealing than a study of a PDS-intervention that is applied to student teaching fieldwork simply because the PDS methods course is a greater departure from traditional practice.

Because evidence is already building under the claims we have identified, we recommend that researchers consider adapting future efforts to include some attention to enlightening these outcomes. This recommendation need not usurp the illumination of new outcomes, and should be taken to include the set of three important emerging outcomes listed in the previous section.

Finally, we recommend that researchers consider ways in which their designs can adapted to allow for greater external validity. As with many education interventions, PDS research is plagued with confounding issues that limit the reliability of its conclusions (this observation is evidenced in the lack of High quantitative EESR studies found to inform the claims made here). Self-selection to PDS cohorts, for example, may be an unavoidable programmatic characteristic. But this does not mean that those who opt out of these programs are the best choice in terms of subjects for outcome comparison. Choosing a more similar comparison group (e.g., the students at a neighboring institution who would opt for a PDS program if one were offered) would not

only increase the confidence of results at a local level, but would also better serve the field as a new source of evidence.

Living Synthesis

The disadvantage of producing a synthesis report like this one is that the body of research upon which it is based is in gradual flux. Although we do not know at what pace new evidence will emerge, we do expect that it will continue to emerge. It is for this reason that our original approach in attempting to answer our research question was to produce nothing more than a PDS research clearinghouse characterized by regular updates as studies became available.

In support of the need for an ongoing clearinghouse for PDS research, the National Association for Professional Development Schools (NAPDS) has agreed to provide updated versions of our claims and the spreadsheet of study characteristics. For the foreseeable future, these documents will be available on the association website (napds.org) with updates appearing each winter to include the previous year's publications and other sources of evidence.

In time, this document, like the syntheses before it, will be a part of the historical record of PDS research. For now, it is our hope that it will fill the need of those who are making decisions with regard to PDS programming, and that it will serve as both a guide for those conducting PDS research and a point of departure for future efforts to synthesize results.

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