Value-Added Evidence of Student Achievement Gains in Schools Hosting Wichita Teacher Quality Partnership Pre-Service Teachers

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ABSTRACT: To understand the immediate impact of a university-school district partnership that places pre-service teachers (both traditional undergraduates and graduate students in an initial licensure residency program) in a Professional Development School (PDS) model, this exploratory study reviewed data from yearly examinations required by the Kansas State Department of Education for the purpose of monitoring average yearly progress in reading and math. Scores of students (grades 3-5) in 16 PDS sites were compared to scores of students in 16 non-PDS sites in the same district, matched for similarity based on demographic criteria. Findings indicate statistically significant differences in gains in the percent of students performing at or above proficient on state reading assessments, with students attending PDS sites outperforming those who attend non-PDS sites. Findings related to math performance approached significance but did not reach statistically significant levels. These findings suggest that having pre-service teachers in a PDS site, utilizing a strong university-school partnership model, can positively impact student achievement.

NAPDS Essentials Addressed: #2/A school–university culture committed to the preparation of future educators that embraces their active engagement in the school community; #5/Engagement in and public sharing of the results of deliberate investigations of practice by respective participants

Introduction

The effectiveness of university teacher preparation programs is of great public interest currently. A partnership to advance teacher education and thereby increase student learning was formed by Wichita State University (WSU); Wichita Public Schools (WPS); local Head Start; The Opportunity Project (TOP), a local not-for-profit early childhood center; and area community colleges. This partnership, known as the Wichita Teacher Quality Partnership (WTQP) received a five-year Teacher Quality Partnership (TQP) grant from the U.S. Department of Education in 2009.

The WTQP has as its core mission the preparation of a diverse cadre of highly qualified teachers for urban school settings. The WTQP is multi-faceted, sequential, ongoing, and encompasses (a) recruitment to the field of teaching, (b) multiple ways in which prospective teachers are prepared for licensure, (c) induction support for new teachers as they enter their classrooms, and (d) continuing professional development of teachers throughout their careers. An extensive evaluation process is conducted each year to measure the success of the various parts of the WTQP and, ultimately, the success of the program completers as classroom teachers after five years of teaching.

Because the mission of the WTQP is preparing teachers for effective student learning, the immediate impact of the partnership is also important. To understand this better, the partners wanted to look at what the direct effects of having pre-service teachers—who are experiencing longer and more focused field placements and studying a curriculum transformed to meet the needs of urban students—might have on students in partnership schools. This research examines students in the WTQP Professional Development School (WTQP PDS) model elementary schools and compares them to their counterparts at non-PDS elementary schools. The purpose was to identify any differences between the groups based on state mandated "average yearly progress" examinations that were instituted with No Child Left Behind legislation.

Professional Development Schools: An Overview

WTQP utilizes a Professional Development School (PDS) model that provides for extended placements in the field in targeted, diverse, urban schools using a co-teaching model. In the mid-1980′s, with the work of the Holmes Group and the National Network for Educational Renewal, the term "Professional Development School" (PDS) was coined. PDS schools are defined as "innovative institutions formed through partnerships between professional education programs and P-12 schools" (NCATE, 2013, p. NUMBER). PDS partnerships have four primary missions: (a) preparing new teachers, (b) developing faculty and staff, (c) research directed at improvement of

practice, and (d) enhanced student achievement. In the late 1990s and early 2000s, the National Council for Accreditation of Teacher Education (NCATE, 2001) established and published PDS standards. These standards are built into the framework of WTQP and include: integration of professional and student learning through inquiry, learning in the context of practice, blending of resources, and having access to an expanded learning community (www.ncate.org). The National Association of Professional Development Schools (NAPDS) also indicates that there must be a school-university culture that is committed to the preparation future educators that embraces their active engagement in the school community (www.napds.org). Extant research has typically focused on examining the impact of a PDS model on pre-service teachers' knowledge and preparation (Darling-Hammond, 2006; Pepper, Hartman, Blackwell, & Monroe, 2012; Rieckhoff & Larsen, 2012). Less research has been conducted on the effects of a PDS model on P-12 student achievement.

History of PDS

The notion that university-school partnerships are beneficial for student achievement and the improvement of teaching practices is not new. Documentation indicates that this discussion initiated over 100 years ago with the occurrence of the Committee of Ten, which called for greater involvement between universities and schools (Clark, 1988). Although the work of this group focused on secondary schools, it set the groundwork for university-school partnerships.

The idea of university-school partnerships was revisited in the mid-1980s with the Carnegie Forum proposal for clinical schools. The Holmes Group (1986) encouraged the adoption of PDSs. Partnerships between schools and universities broaden the focus from cooperation during field placements for pre-service teachers to collaborative renewal and development of each aspect of the educational system (Darling-Hammond, 1996; Darling-Hammond, 2005; David & Handler, 2001; Sirotnik & Goodlad, 1988). An effective university-school partnership supports the notion of a value-added model in education. The terms value-added is derived from economics, where it is often used to describe the additional value a business generates or contributes to a product or service. In education, value added most commonly describes the additional value schools bring to the achievement of their students (Downes & Vindurampulle, 2007).

Transformation of a Teacher Preparation Program

Prior to implementation of WTQP, WSU's teacher preparation program was a hybrid model, with select students in a PDS model and the remaining students in a non-PDS model. With implementation of WTQP, WSU's teacher preparation program has been transformed to a fully implemented, large-scale PDS program. Every pre-service teacher is part of the PDS model.

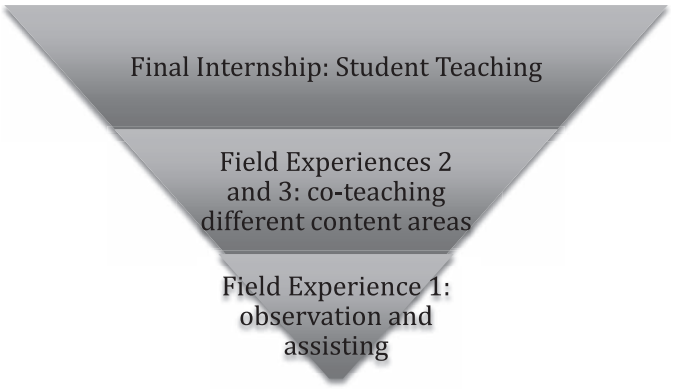

Figure 1. WTQP Field Experiences

Some of the changes that have occurred within the WSU teacher preparation program as an outgrowth of WTQP include: (a) focus on meeting the needs of students in an urban school district, (b) focus on differentiated instruction, (c) expand the New Teacher Induction Program, (d) establish rigorous admission criteria and align them with the hiring objectives of the partnering agencies, and (e) program curricular changes that

(a) improve and assess teaching skills
(b) use empirically supported practices and scientifically-based research across all applicable content areas
(c) train and provide professional development in use of differentiated instruction and meeting the needs of diverse learners
(d) provide for explicit, systematic instruction in literacy skills, incorporating the key components identified in the National Reading Panel report and Reading Next as well as tiered levels of instructional support guided by diagnostic and formative assessments

The WTQP program was modeled after the PDS philosophy that delineates shared responsibility of universities and schools for teacher preparation and PreK-12 student learning (Watts & Levine, 2010). A key component of the success of the WTQP program is the systematic, extended field placements teacher candidates engage in. There are four primary field experiences teacher candidates complete during their educational careers. The first field experience has students engaged in observations and assisting the teacher during their first semester in the WTQP program. These responsibilities grow over the four semesters so that by the time the candidate is completing the final internship, s/he has primary responsibility of planning, teaching, and assessment of PreK-12 student learning (see Figure 1). There is a hierarchy of responsibility within the field experience framework for teacher candidates, with the initial responsibilities being less than the final responsibilities found in student teaching. There is closely supervised interaction among teacher candidates, WSU faculty/University Supervisors (US), cooperating teachers (CT), and WPS administration. The US often serves as a resource in the

partnership schools for content and pedagogical questions and, at times, participates in school-based professional development. Their role is viewed as a shared resource—a resource for our pre-service candidates as well as for teachers in the PDS sites.

Field experiences are planned throughout the entire course of the WTQP program. During their first semester, teacher candidates complete a field experience involving observation (focusing on contextual factors, procedures of the classroom, diversity, and the culture of a school/classroom) and assisting the teacher in daily activities. The second and third semesters are spent in field experiences that focus on planning, teaching, and assessment in specific content areas (e.g., in elementary math & science methods are in the first pre-student teaching semester and literacy and social studies are in the second pre-student-teaching semester). The culminating field experience occurs during the teacher candidates' last semester as a student teacher. This experience involves fulltime placement in the field, assuming the lead role in the classroom for an extended period of time.

WTQP teacher candidates are assigned to partnership schools and complete all of their field experiences and student teaching within those schools. Typically, the first two field experiences occur in different schools and the final two field experiences occur in the same school (for a yearlong, extended placement). University faculty are affiliated with a particular school or schools and collaborate with the public school faculty in those schools to monitor and guide the cohort of WTQP teacher candidates placed there throughout the total two years of teacher preparation courses.

All WTQP teacher candidates are placed in partnership schools identified through a mutual selection process. Schools that express an interest in serving as partnership schools are consulted regarding their high need status and commitment to a shared responsibility for teacher preparation and continuous learning. This commitment is demonstrated by a willingness of the school faculty to mentor *cohorts* of teacher candidates to create a community of learners who support and nurture teacher candidates and the professional development of school and university faculty affiliated with the school.

In summary, WSU's teacher preparation program went from a hybrid PDS model, with only select students participating in a PDS program to a full-scale PDS model with every pre-service teacher participating in the WTQP PDS model. In addition, curricular and program changes were made to better prepare our candidates for successful teaching within an urban school district. Finally, the USs play an active role in the school, serving as a resource and professional mentor, rather than simply supervising a candidate.

Literature on Outcomes

Extant literature suggests that pre-service teachers prepared at PDS sites experience longer, more structured clinical experiences (e.g., Fountain & Evans, 1994; Trachtman, 1996); more frequent and sustained supervision and feedback (e.g., Hayes & Wetherill, 1996); and more diverse, authentic learning experiences (e.g., Rasch & Finch, 1996). P-12 student outcomes research is scant. Few research studies have examined the impact of the PDS model on student learning outcomes. Despite frequent claims about the effectiveness of PDS partnerships, few studies have actually provided evidence of enhanced student learning and even fewer have addressed student achievement. In a 1998 review of the literature, Teitel noted a paucity of quality studies about the effects of PDSs and called for substantive evaluation of the PDS model. Most of the documentation Teitel found focused primarily on pre-service teachers and relied upon self-report data, usually a survey instrument. Teitel found almost no information on the impact of PDSs on students. Although the number of studies has increased significantly from 1998, most tend to continue to focus on attitudes, beliefs, and pre-service teacher outcomes. A few recent studies have examined student outcomes in PDS sites.

In their synthesis of two action research projects, Knight, Wiseman, and Cooner (2000), found that students involved in writing and math activities within a PDS site made improvements in writing and math. No comparison group was utilized. In another study, Fisher, Frey and Farnan (2004) compared emergent reading skill outcomes in Kindergarten and first grade students in classes with and without a PDS student intern. Results indicated that the groups' scores were comparable at pre-test. However, at post-test, those in classrooms with PDS student interns outperformed those in classrooms without PDS student interns on two standardized measures of emergent literacy.

More recently, Ogletree (2007) focused on student achievement in math and science in 12 newly formed, high-needs, urban PDSs in the state of Georgia. These 12 schools were matched with 12 comparison schools with similar demographics. Using the Georgia Criterion Referenced Competency Test (CRET) to assess the "achievement" of elementary school students and the Georgian High School Test (GHSGT) to assess the achievement of high school students, Ogletree analyzed test data after one year of implementation and found that there was a significant change in achievement means for PDS schools when using PDS site data only. However, when data from both PDS and matched comparison schools were analyzed, the overall results indicated no statistically significant gains in mathematics and science for PDSs in relation to comparison schools.

In a case study design, Poidomani (2009) examined standardized test scores among 14 New Jersey High Schools to examine differences between PDS schools and non-PDS schools in terms of student achievement and other school variables. Results indicated that when ethnicity was not accounted for, there were no significant differences in mathematics and language arts performance between students in the PDS schools and those in the non-PDS schools.

The future of the PDS is at a crossroads. After years of PDS practice, there is still limited evidence that PDSs positively impact student learning and much of that is inconsistent in its findings. School districts need tangible evidence regarding the efficacy of

Table 1. Summary Data From PDS Schools and Non-PDS Comparison Schools

School	*School Enrollment*	*% ELL*	*% Economically Disadvantaged*
WTQP PDS1	465	48	93
Non-PDS1	557	44	96
WTQP PDS2	451	2	84
Non-PDS2	519	2	85
WTQP PDS3	524	3	68
Non-PDS3	531	3	72
WTQP PDS4	863	82	96
Non-PDS4	875	77	97
WTQP PDS5	374	1	62
Non-PDS5	390	3	72
WTQP PDS6	885	69	97
Non-PDS6	854	77	97
WTQP PDS7	480	6	85
Non-PDS7	425	7	84
WTQP PDS8	430	4	59
Non-PDS8	419	5	59
WTQP PDS9	461	36	91
Non-PDS9	454	32	94
WTQP PDS10	502	83	98
Non-PDS10	462	77	97
WTQP PDS11	338	16	94
Non-PDS11	389	12	92
WTQP PDS12	512	0.4	92
Non-PDS12	475	3	91
WTQP PDS13	241	9	70
Non-PDS13	205	3	72
WTQP PDS14	601	68	93
Non-PDS14	574	70	94
WTQP PDS15	608	4	88
Non-PDS15	555	2	85
WTQP PDS16	739	20	87
Non-PDS16	751	23	90

PDSs, and that evidence is in future research that can specifically document any positive impact that the model may have on student achievement. That type of evidence is necessary to advocate for supporting policy changes at the school district and university levels necessary for the PDS to function as originally designed (Ross, Brownwell, Sindelar, & Vandiver, 1999).

It is conceded that the use of state assessment data may not be ideal; however, there is a strong rationale for the use of state assessment data. First, the use of state assessment data, as indicated by the National Center for Education Evaluation and Regional Assistance (NCEE), allow for greater policy relevance. While district-administered test scores may not cover every relevant domain of student achievement, they captured the content that schools deem most important or worthy of assessing. State assessments enable researchers to estimate the extent to which program implementation influences student achievement relative to NCLB goals. Additionally, in their 2010 study, Somers, Zhu, and Wong reported that the use of state assessment data was reliable and valid in comparison to study-specific data, when examining the impact of a program on student achievement. This finding was further supported by Olsen, Unlu, Jaciw, and Price (2011) who examined this same issue. Results in their study provide no evidence that evaluations relying on state tests will yield systematically different impact estimates than evaluations that rely on study-administered tests.

Given that one of the four primary missions of a PDS model is improved student learning, this is an area in the research literature that needs to be addressed. It is realized that there are confounding variables that cannot be controlled within classroom research (e.g., nonrandom assignment to teachers, schools, etc.) that may hinder student outcomes-based research. However, with the impetus on improved student learning that was created by No Child Left Behind legislation, it is important to, at the very least, explore student outcomes within PDS sites compared to student outcomes from schools that do not serve as PDS sites.

The exploratory study to follow asks the following research questions: (a) What was the performance of students who attended a WTQP PDS site on reading and math state assessments? (b) How do students in WTQP PDS sites vary in their performance on reading and math state assessments compared to matched comparison sites?

Method

The scores of students (grades 3-5) in 16 WTQP PDS schools were compared to scores of students in 16 non-PDS schools in the same district. The comparison schools were matched for similarity based on demographic criteria. WTQP pre-service candidates were placed at the WTQP PDS sites. The study reviewed data from yearly examinations required by the Kansas State Department of Education (KSDE) for the purpose of monitoring average yearly progress in reading and math. The research question was examined as percent of school gain in reading and math between 2006 and 2011 (initial implementation of WTQP PDS and between 2009 and 2011 (full WTQP PDS implementation).

Comparison Groups

To compare school-level data, two groups were created. One group was the WTQP PDS schools (n=16). Sixteen non-PDS schools in the WPS district were identified for comparison. These schools were used to create a second matched group. Schools were matched on four criteria: (a) geographic proximity (i.e., same or neighboring zip codes), (b) percent of economically disadvantaged students (based on percent of the student body receiving a free or reduced cost lunch), (c) percent of English Learners (based on school identification), and (d) similar school enrollment. These data were found on the KSDE website (www.ksde.org). Table 1 provides an overview of the schools as matched pairs.

Within the WTQP PDS sites, 200 pre-service teachers were placed. This includes pre-service teachers at the observation level, the pre-student-teaching levels, and the student teaching level. Within the non-PDS sites, there were 50 pre-service

Table 2. Descriptive Statistics in Reading: Percent of Students Proficient or Above in Reading

Group		*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Non PDS	Mean	69.94	69.73	73.51	76.21	71.77	76.40
	Std. Deviation	11.32	11.01	11.27	8.74	12.02	10.13
WTQP PDS	Mean	67.53	66.69	67.07	72.21	74.59	79.47
	Std. Deviation	14.55	14.15	12.39	10.59	9.62	8.60

teachers placed. There are two other universities that place pre-service teachers in USD 259 schools; however, they do not utilize a PDS model.

Measures

The data examined include student performance on the KSDE state assessments in reading and math. As background, Kansas assessments in reading and math were planned and developed, then administered for the first time in spring 2006. WestEd served as the contractor for the development of test items based on test specification provided by KSDE. The Center for Educational Testing and Evaluation (CETE) at the University of Kansas served as the contractor for all other aspects of the testing program. For general assessment test forms in both reading and math, the item format was multiple-choice with one correct answer to be selected from four response options provided to each question. Students in grades three through eight (reading and math), grade 10 (math) and grade 11 (reading) participate in the assessments.

Data for students (grades 3-5) were analyzed because full implementation of the WTQP PDS grades one through 12 did not occur until 2012. Data, which represent the percent of the students at each school who performed proficient or above in reading and math state assessments, were collected from the KSDE website (www.ksde.org).

Validity and reliability of the measures are further insured by WPS standardized curriculum and pacing guide, which provide consistent instructional sequences across all schools in the district. That is, students in WTQP PDS and non-PDS schools were using the same curriculum, taught in the same sequence. Teachers were provided with the same instructional professional development as district in-service education. WTQP PDS teachers also received WTQP PDS-specific preparation in mentoring, co-teaching, and evaluation of pre-service teacher candidates and interns.

For this study, data from 2006 (pilot implementation) to 2011 are reported. Mean gains in the percent of students in sites who scored at or above proficient in reading and math were analyzed. Descriptive statistics of means and standard deviations of data from 2009-2011, the time period following full implementation of WTQP, were compared. Data from 2006-2008 represent pilot data only (with only select PDS sites and pre-service teachers being involved in the program). Data from 2009-2011 are full implementation data with every pre-service teacher candidate in the College of Education at WSU going through the WTQP PDS program.

Results

Comparisons Between 2006 and 2011

Table 2 shows that in 2006 students in the non-PDS schools group performing proficient or above in reading were recorded to have a mean score of 69.94 with a standard deviation of 11.32. By 2011, students in this group were recorded to have a mean score of 76.40 with a standard deviation of 10.13, thus revealing a mean gain of 7.46 and a decrease in standard deviation of 1.19. In 2006, students in the WTQP PDS comparison schools scoring proficient or above were recorded to have a mean of 67.53 with a standard deviation of 14.55. By 2011, students in the WTQP PDS group were recorded to have a mean score of 79.47 with a standard deviation of 8.60. A review of the rows and cells displayed in Table 2 reveals that the students in WTQP PDS schools' mean score was lower than that of students in the non-PDS schools in 2006, but the WTQP PDS schools' mean in 2011 was higher than that of the non-PDS schools. Further, the standard deviation of the WTQP PDS schools decreased more between 2006 and 2012 when compared to the standard deviation of the non-PDS schools and was smaller than that of the non-PDS schools. However, no statistically significant differences at the .05 level were identified.

Table 3 shows that in 2006 students in the non-PDS schools group performing proficient or above in math were recorded to have a mean score of 70.53 with a standard deviation of 8.76. By

Table 3. Descriptive Statistics in Math: Percent of Students Proficient or Above in Math

Group		*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Non PDS	Mean	70.53	73.68	80.57	80.61	78.78	81.99
	Std. Deviation	8.76	7.67	8.40	8.74	11.50	8.97
WTQP PDS	Mean	67.48	72.71	75.31	77.99	80.23	84.19
	Std. Deviation	13.81	11.23	14.14	7.20	10.21	7.10

H = 2.696, p<.101).

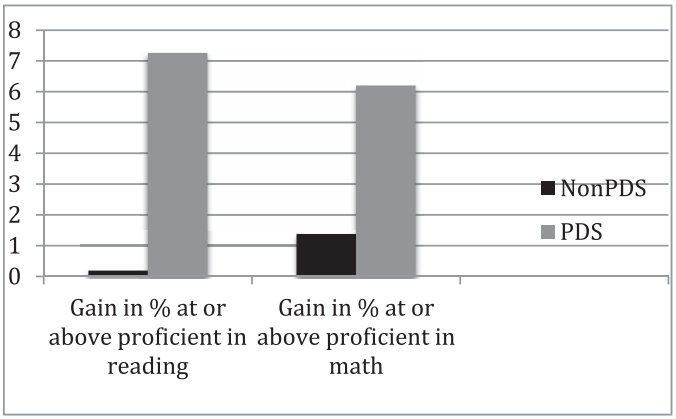

Figure 2. Graphic Representation of WTQP PDS vs. Non-PDS Data Between 2009 and 2011

2011, students in this group were recorded to have a mean score of 81.99 with a standard deviation of 8.97, thus revealing a mean gain of 7.46 and a decrease in standard deviation of .21. In 2006, students in the WTQP PDS comparison schools scoring proficient or above were recorded to have a mean of 67.48 with a standard deviation of 13.81. By 2011, students in the WTQP PDS group were recorded to have a mean score of 84.19 with a standard deviation of 7.10. A review of the rows and cells displayed in Table 2 reveals WTQP PDS schools' mean score was lower than that of students in the non-PDS schools in 2006, but the WTQP PDS schools mean in 2011 was higher than that of the non-PDS schools. Further, the standard deviation of the WTQP PDS schools decreased between 2006 and 2011 while that of the non-PDS schools grew slightly. The schools were making gains in math. However, no differences between the two groups of schools at the .05 level of significance were identified.

Comparisons Between 2009 and 2011

Data in reading and math performance on KSDE state assessments from 2009 and 2011 were examined. The mean gains in percent of students at or above proficiency for WTQP PDS and non-PDS sites are reported in Tables 3 and 4. Figure 2 provides an illustrative view of the differences.

Table 4 reflects the mean growth gain of students scoring at or above proficient on the state assessment in reading within the school group. For WTQP PDS sites, the mean score of students in the proficient or above categories on the state assessment in reading was higher in 2011 than in 2009. A Kruskal Wallis test

Table 4. Mean Gains in Percent of Students Performing at or Above Proficient in Reading Within WTQP PDS and Non-PDS Schools from 2009-2011 (Full Implementation)

Group	*Mean*	*N*	*Std. Deviation*
Non-PDS	0.19	16	8.10
WTQP PDS	7.26	16	9.03

H = 4.387, p<.036).

Table 5. Mean Gains in Percent of Students Performing at or Above Proficient in Math Within WTQP PDS and Non-PDS Schools from 2009-2011 (Full Implementation)

Group	*Mean*	*N*	*Std. Deviation*
Non-PDS	1.38	16	6.86
WTQP PDS	6.20	16	7.59

H=2.696, p<.101.

was utilized given that the independent variable (PDS vs. non-PDS) is nominal (i.e., categorical), the dependent variable is ordinal (i.e., ordered achievement on the state assessment: exceeds standard, meets standard, approaches standard, academic warning). The test revealed a significant effect of gain in reading on the state assessment between school groups (H = 4.387, p<.036). That is, students in WTQP PDS schools demonstrated greater growth than those in non-PDS schools in reading.

Table 5 reflects the mean gain of students scoring at or above proficient on the state assessment in math. For WTQP PDS sites, 6.20 was the mean gain in math between 2011 and 2009. In contrast, only 1.38 was the mean gain in non-PDS sites of students who scored in the proficient or above categories. A Kruskal Wallis test revealed no significant effects of group membership H = 2.696, p<.101).

Figure 2 illustrates the gain between 2009 and 2011 in reading and math by group. Clearly, more gain is shown in the percent of students scoring at or above proficient in reading and math within WTQP PDS sites than non-PDS sites.

Discussion

While this study was exploratory in nature and no causation can be determined, the results provide thought-provoking considerations. The research questions sought to determine if there are benefits to 3-5th grade students attending a PDS site within WTQP and how these students' performance on state assessments compared to children attending similar schools not in the WTQP PDS program. Achievement gain in both reading and math was demonstrated in students attending WTQP PDS sites over non-PDS sites between the years 2006 and 2011, but the gain did not reach the .05 level of significance when examined statistically. Data were unable to be disaggregated by undergraduate and residency programs due to overlapping placement in PDS sites.

In contrast, during the years of full implementation (i.e., with every teacher candidate at WSU in the WTQP PDS program) of the WTQP PDS model, 2009 to 2011, statistically significant gain within the area of reading was demonstrated in students scoring at or above proficient and attending WTQP PDS sites. Noteworthy gain was found between WTQP PDS and non-PDS sites when math gains were compared, but the difference was not great enough to meet the .05 level of difference when examined statistically.

Our findings support those of Fisher et al. (2004) who found that students in classrooms with PDS pre-service teachers outperformed students in classrooms without PDS pre-service teachers in literacy. Additionally, our findings offer support to Olgetree's results (2007) that no statistically significant differences emerged in math achievements between students in a PDS site and those in a non-PDS comparison site.

Our findings refute those of Poidomani (2009) who found no statistically significant differences in math and language arts achievement between students in PDS sites compared to those in non-PDS sites. However, Poidomani's sample consisted of high school students, not elementary students. It could be that the impact of PDS involvement has its biggest impact during the elementary years.

There are specific components of the WTQP PDS model that may support impact on student learning that other PDS models may not feature. A key component of the WTQP PDS model was the systematic program curricular changes that were made, specifically in reading. These curricular changes seem to have provided the pre-service candidates with additional content knowledge and pedagogical skills that support student learning. This could also explain the finding that the impact made on students' math achievement scores was not statistically significant. The math curriculum at the university level did not undergo significant revisions during the research timeframe. Ogletree (2007) and Poidomani (2009) did not examine or include curricular changes made at the university level as a factor to consider when examining the impact of a PDS model.

The data observed indicate that student achievement can be positively associated with enhancement provided by a WTQP PDS educational model where pre-service teacher candidates participate in classroom learning within reading as a content area. As in all non-randomized social-scientific research, data analysis does not prove causation. We are unable to state that the WTQP PDS model caused the gains in reading. However, the analysis does verify that for reading gains, a statistically significant difference between the WTQP PDS and non-PDS schools was evident, with students attending a WTQP PDS school demonstrating greater gains than those in non-PDS schools in reading. Therefore, the early data examined here show promise that greater student achievement on state mandated examinations could be related to components found within a pre-service teacher education program utilizing the WTQP PDS model.

There are limitations to this research. First, it was not experimental in nature (i.e., no random assignment was made to site); however, the use of a quasi-experimental design is empirically supported in educational research. Second, as aforementioned, the use of state assessment data, while empirically validated as valid and reliable, may not be the best use of a measure of student learning.

Another limitation that warrants discussion is the consideration of the characteristics used for matching. While the research data for the PDS schools and non-PDS schools are important to match when it comes to student demographics (a factor in student achievement), it was the only match made. Factors such as years of teaching experience were not examined between PDS and non-PDS schools.

Further research is needed to replicate and extend the findings reported here. Moreover, future research into the value of the WTQP PDS model for teacher preparation and improved student learning might focus on additional variables (e.g., teacher characteristics, different curricula). Over time, PDS models have been verified as effective tools for pre-service teacher education, this research extends the benefits by offering data suggesting the value added of the WTQP PDS model on student achievement. SUP

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