

## Part 4

### Higher Education & Teacher Education and Training

Cheryl North, Kimberly C. Feldman, Michele L. Stites & Eugene C. Schaffer

#### Impact on Student Learning: The Contribution of a Professional Development Collaboration

##### **Abstract**

Schools of education are often criticized for not effectively preparing teacher candidates and teacher education research has been criticized for lack of rigor in examining the impact on student learning. Teacher preparation accrediting agencies have responded with requirements for programs to demonstrate the effectiveness of their graduates based on their students' achievement. This has proved challenging for programs that lack access to student achievement data. To examine teacher effectiveness, one mid-size state university devised a strategy using publicly available state data.

This case study presents an analysis of the mathematics performance of students as it relates to a Professional Development School program for cooperation between Laurel Woods Elementary School and University of Maryland, Baltimore County (UMBC). With almost 50% of the school's 1<sup>st</sup> through 3<sup>rd</sup> grade teachers being UMBC graduates, this analysis of 3<sup>rd</sup> grade achievement data provides insight into the impact of teacher education graduates on their students' achievement. The study compares Laurel Woods' overall and subgroup data with that of the state. The results indicate that teacher education programs and Professional Development School partnerships can contribute positively to the success of schools where a high proportion of teachers are from one teacher education program.

Keywords: teacher preparation, assessment of teacher performance, student learning, professional development schools, low-cost evaluation, impact of teacher education on schools, preservice teachers

##### **Introduction**

Recognizing that teachers play a critical role in determining student success, teacher education endeavors to provide prospective teachers with skills and experiences needed to enter the profession as highly skilled Pre-Kindergarten through grade 12 (PK-12) teachers and ready to maximize PK-12 student outcomes. However, critics often identify schools of education as the weak link in the preparation of teachers, arguing that teacher candidates are the lowest performance population in the university, take the least number of rigorous courses, and are so poorly prepared that fifty percent leave the profession in five years (Fraser & Lefty,

2018; Walsh, 2001, 2020; Tucker, 2018). Furthermore, teacher education research has come under fire for lack of rigor in attention to impact on student learning (Walsh, 2001, 2020; Tucker, 2018). Accrediting agencies such as the Council for the Accreditation of Educator Preparation (CAEP) responsible for the quality of teacher education programs responded to these criticisms with a number of policy changes to improve outcomes. One such change was to require teacher education programs to demonstrate the effectiveness of their graduates in their school settings based on student achievement (Darling-Hammond, 2020). The difficulty is teacher education programs are required to measure performance based on data which is under the control of a separate organization, the school district, whose concerns include personnel privacy, data security and student confidentiality.

It is important that teacher education programs examine the quality of teacher preparation and strive for continuous improvement. Although a teacher's success as demonstrated by student achievement is often considered to be indicative of her/his preparation program, universities have historically not been able to follow their graduates and review their students' data for purposes of program improvement due to lack of institutionalized tracking structures and teacher and student confidentiality concerns (Fraser & Lefty, 2018). This leads to the question of how best to measure the impact of teacher education programs on PK-12 student success.

In response to on-going criticism of teacher education programs, the State of Maryland, where this study took place, committed to improving teacher education through a policy document entitled *The Redesign of Teacher Education* (1995) (Putnam & Walsh, 2019; Clemson-Ingram & Fessler, 1997). A core element of that policy proposed Professional Development Schools which were codified in regulations in 2007 (Clemson-Ingram & Fessler, 1997; Darling-Hammond, 2020; Professional Development Schools, 2007). A Professional Development School (PDS) is a collaboratively planned and implemented partnership between a university and specific PK-12 schools for the academic and clinical preparation of preservice teachers and the continuous professional development of both Local Education Agency (LEA) staff and Institutions of Higher Education (IHE) faculty. The focus of the PDS partnership is improved student performance through research-based teaching and learning. Over the years since their introduction, IHEs and LEAs worked to enhance the PDS experience for preservice and inservice teachers. Recent research on well-developed PDS partnerships suggests that graduates of these programs feel more confident and prepared and are rated as more effective by employers and supervisors, and inservice teachers who participate in the PDS partnership also see the collaboration as beneficial for their practice (Darling-Hammond, 2020).

Standards and processes were put in place by the state to assure compliance with the PDS mandate through onsite reviews of teacher education programs that included a review of selected PDS partners using an assessment system that evaluated the partnership based on five standards linked to four components. The standards established goals for learning communities, collaborations, accountability, organization, and diversity. Each of these standards were examined from the perspective of four components: teacher preparation, continuing professional development, research and inquiry, and student achievement (Professional Development Schools, 2007).

Over the years since the implementation of the PDS standards, little has been done to assess the impact of PDS programs on student learning. This dearth of research reflects the difficulty in establishing a strategy for assessing the impact of teacher education programs on schools given the complexity and cost of the undertaking. Even though student achievement was the intended outcome of the PDS model and one of the four components of the standards, rarely did programs address the accountability component of the standards which is stated in two indicators:

1. PDS stakeholders assume responsibility for improving PreK-12 student achievement.
2. PDS partners collaborate to determine the impact of PDS on student achievement.

Addressing this component of the PDS standards as well as the impact of our graduates is the intent of this study.

## Context

By the year 2000, the IHEs with teacher preparation programs in Maryland had established memoranda of understanding with local school districts to meet the requirements of the PDS regulations. The University of Maryland, Baltimore County (UMBC) Education Department created PDS programs with multiple elementary and secondary schools in five school districts throughout the Baltimore-Washington area. Many of these PDS partners were in place by 2003 and expanded in 2007. One of the expansion PDS sites was Laurel Woods Elementary School (LWES), a suburban school near Washington, D.C., which is the subject of this study. LWES was selected as a PDS after discussions with the Howard County Public School System's (HCPSS) Office for Professional Development Schools and LWES administrators and teachers who determined that the school population and UMBC preservice teachers could mutually benefit from the collaboration.

LWES is a diverse school facing many challenges. In 2018, LWES served 611 students from kindergarten through fifth grade from North Laurel, Maryland, and the enrollment keeps increasing, thus surpassing the maximum capacity of 609 students which the building can hold. There are four or five classrooms at each grade level with an average of 22 students in each classroom. The school is a majority-minority school with 52.1% of the population identified as African American, 23.7% Hispanic, 9.5% Asian, 7.5% white, 0.3% Hawaiian, 0.3% Native American, and 6.6% identifying as two or more races. Approximately 60% of the students receive free and reduced meals, 9.0% receive services for English language learning, and 9.5% receive special education services. LWES is earmarked as a Title I school, which means it has more than 40% low-income families, and therefore receives additional support such as mathematics tutors, reading support teachers, and after-school academic support programs to improve student academic performance and quality of life.

LWES started the PDS partnership with UMBC to serve the Early Childhood and Elementary Teacher Education programs as well as enhance education for the children of the Laurel Woods community. Through the collaboration, UMBC provides a University Liaison to work in the school one day a week providing professional development and support for both preservice and inservice teachers.

The school also selects a faculty member to serve as the PDS site liaison facilitating communication and professional development opportunities between the university and school. As a part of this partnership Laurel Woods hosts preservice teachers completing their 28-week early childhood and/or elementary field experiences. In their first semester they participate 2 days per week in one classroom with a mentor teacher who is jointly selected by the school and university. During the second semester, they teach full time in that same classroom taking over all teaching responsibilities for several weeks during their 80-day rotation. In addition to the UMBC assessment of preservice teachers, HCPSS personnel also evaluate them for the purpose of employing successful candidates as teachers in their schools.

Graduates of UMBC are often employed by HCPSS and specifically at LWES based on their successful internship. While UMBC graduates receive positions across the district, during the 2017-2018 academic year, LWES employed six UMBC graduates of their thirteen first through third grade teachers representing almost half of the classroom teachers in these early grades. This high percentage of UMBC graduates working in one school created the opportunity to use this naturally occurring site for a study of program effectiveness.

Teachers graduating from UMBC with certification in elementary or early childhood education receive degrees in academic fields such as psychology or mathematics as well as their certification. The average teacher comes from the upper third of all high school graduates who take college entrance examinations. Teachers from UMBC have course work and field experience in diverse learners, culturally responsive pedagogy, and methods of instruction, as well as a year-long internship under a mentor teacher trained in working with UMBC students. LWES continues the support and integration of teachers into their school so that students experience a consistency of methods, language, and classroom management regardless of their class assignment.

## **Theoretical framework**

Work done by the Rand Corporation and others suggests that teachers and schools contribute to student learning (Oppen, 2019; Xu & Swanlund, 2013; Rivkin, Hanushek & Kain, 2005). Further, coherent, long-term professional development is demonstrated to be an effective model with extensive practice after implementation leading to a positive, long-term impact on teacher performance and student achievement (Yoon et al., 2007; Polly et al., 2018). To the UMBC faculty, this strategy of long-term practice for professional development is modeled by Professional Development Schools such as LWES where a long-term, coherent and developmental program is the model for inducting teacher candidates into a school setting and enhancing skills of experienced teachers in the school. Furthermore, the nature of mathematics curriculum usually means that it is learned at school, whereas other areas, like literacy, may demonstrate more of a parental or family influence (Sonnenschein, Stites & Dowling, 2020). Therefore, this study examines mathematics scores because it is more indicative of teacher influence.

As noted in the Rand report, “many factors contribute to a student’s academic performance, including individual characteristics and family and neighborhood experiences. But research suggests that, among school-related factors, teachers matter most. When it comes to student performance on reading and math tests, a

teacher is estimated to have two to three times the impact of any other school factor, including services, facilities, and even leadership” (Opper, 2019, p. 1). However, it is important to consider that the teacher performance is nested within the school and that it is difficult to separate the contribution of the teacher to school performance and the school’s influence on the teacher (Xu & Swanlund, 2013). This is supported by recent research from Ronfeldt et al. (2018) that indicated one major element of success of preservice teachers is employment in the school where they had interned.

## **Methodology**

An impact study was designed in three phases to examine the effect of the PDS program and UMBC graduates on student learning. The three-phase design reflects the complexity of examining teacher performance, the availability of data sources, the questions addressed in the study, and the potential for cost or privacy concerns. Not all phases have been completed at this time. Each phase of this study contributes a perspective on the school and student learning that, when brought together, provide a more complete understanding of teacher effectiveness and the impact of the teacher preparation program and PDS partnership. Phase I, the focus of this study, utilizes public records available to the university researchers on state and local websites and related institutional reports from HCPSS. Phase II includes interviews and focus groups with teachers, administrators, and UMBC personnel assigned to the school. Phase III involves data requested in Fall of 2015 by the UMBC Department of Education, but data on individual teachers’ evaluations or their specific students’ performance were not made available by the school district for privacy reasons. This is an ongoing conversation with the school district, but in the meantime, this made the public data even more essential to understanding UMBC's contribution to student learning.

The Phase I strategy was undertaken in spring of 2018 using publicly collected data that was part of state-mandated assessments. This made the data for the Phase I study both a low-cost and an unobtrusive strategy. Data collection was conducted by the school as part of its yearly assessment, making it a no-cost method to determine effectiveness. The study did not require HCPSS or UMBC Institutional Research Board approval as data was available from the district and state websites. The study did not intrude on the school routines or reduce instructional time and, finally, it responded to criticism leveled at the lack of performance data of graduates of teacher education programs while meeting CAEP national accreditation standards for linking standardized testing outcomes of students to our graduates’ instruction.

The UMBC research team proposed studying the performance of students in third grade rather than all grades because UMBC’s graduates contributed extensively to student learning and the student test performance in the first three grades at the school and public data was available beginning in grade three. The research team believed findings on the school performance then could, in part, be attributed to the effectiveness of UMBC’s graduates and the teacher education program. The research team recognized that specific teachers could not be linked to specific student outcomes as the public data is reported at the grade level rather than the classroom level. However, drawing on teacher effectiveness research and school effectiveness research, the research team concluded that the teachers acting together can be both individually effective and, more importantly from a school and student

perspective, can be an effective instructional team. The research team also recognized that the school environment contributes to the teachers' accomplishments just as teachers enhance the school's success.

Teacher performance data as measured by value added methods is considered by CAEP as the standard for assessment of Education Provider Programs. Some states have that data available through a statewide assessment system. Maryland does not have that kind of a system in place nor do they currently have systems that permit the tracking of teacher candidates once they have left their certification program. Without ready access to teacher-by-teacher student performance data, the UMBC Education Department needed to come up with alternative means of assessing graduate and program impact on PK-12 student learning using mixed methods and multiple data points. Public domain data was collected in June of 2018 to establish baseline information on the school and to determine what questions might be most appropriate to ask university personnel, teachers, and administrators in later studies. With test performance on a teacher-by-teacher basis not available currently in Maryland, UMBC uses school-level data as a proxy by examining test performance by grade level and subpopulations within the school. These findings are then compared to state level data.

The teachers included in this study were UMBC graduates of the early childhood or elementary programs and full-time teachers at LWES in grades one through three. Three out of five teachers at the first-grade level, two out of four teachers at the second-grade level, and one out of four teachers at the third-grade level were UMBC alumni. The data presented in this study examine third grade because that is the grade level in which test data is available. The third-grade scores reflect learning at the first and second grade as well as third grade, and can, in part, be attributed to those teachers. There are no state or nationally normed tests available to the researchers for students in first and second grade. Upper grade scores were not reviewed as Laurel Woods has not employed a large number of UMBC teachers in those grade levels.

The data analyzed came from assessments designed for grades 3-8 by the Partnership for Assessment of Readiness for College and Careers (PARCC). PARCC was specifically designed as a means of measuring student achievement of the Common Core State Standards (CCSS) in English Language Arts and math. The tests provide students with a scaled score that is then used to place them in one of 5 achievement levels to determine if they have met or exceeded standards: Level 1 "Did Not Meet" expectations, Level 2 "Partially Met" expectations, Level 3 "Approached" expectations, Level 4 "Met" expectations, and Level 5 "Exceeded" expectations (more info on PARCC can be found at <http://mdk12-archive.msde.maryland.gov/assessments/parcc/index.html>). For the purposes of this study, we will be comparing the percentage of students in the school and the state that met and exceeded expectations in math.

This study compares LWES overall student population scores with state overall student population scores as well as examining subsets of the student population to determine if the school is meeting a major goal of the school district and the state to reduce achievement gaps between subgroups. For LWES, the subgroups that we are focusing on are African American, Hispanic, and Free and Reduced Meal subpopulations because these groups are ones that are of concern.

## Results

An analysis of LWES scores in comparison with the other schools in the state demonstrates that it is a successful school. The LWES African American population percentile at the Exceeded level (6.1%) almost doubled the African American State percentile at the Exceeded level (3.7%), while LWES African American students at the Met level (32.7%) were almost 10 percentage points higher than the state African American students (22.4%). The overall percentile for African American students who Met or Exceeded expectations at the state was 26% while at LWES it was 38.8%, which is over 12 percentage points higher than the state. Similarly, the percentage of African American students at the state who achieved at the Did Not Meet level was 22.6%, while at LWES it was only 10.2%, which is 12 percentage points lower than the state African American population and 4.1 percentage points lower than the overall state population.

The percentage of LWES Hispanic population that Exceeded or Met standards according to PARCC also far surpassed the state Hispanic population with 12.5% versus 4.6% in the Exceeded category and 29.2% versus 23.7% in the Met category. Overall, 41.7% of Hispanic students at LWES Met or Exceeded standards compared to 28.3% of Hispanic students across the state. The percentage of students in the Not Met category at LWES (8.3%) was less than half of that for the Hispanic students across the state (19.6%). In fact, the percentage of the Hispanic student population at LWES who Met or Exceeded standards (41.7%) was similar to the percentage of all student populations across the state (43%).

Furthermore, LWES has a Free and Reduced Meals (FARMS) population of approximately 60%. FARMS is often used as a proxy for determining low socioeconomic status (SES) in a school. According to previous studies, low SES can result in an 18% difference in scores compared to a high SES population (Baird, 2012). Baird argues that the difference between high and low SES performance is one standard deviation. Based on the low SES of the majority of students at LWES, it would be expected for them to have scores significantly lower than the state average.

However, our findings indicate that LWES had only 0.4% fewer students on average at the Exceeded level and is actually 3.2% higher at the Met level. Overall, the LWES percentage of students that Exceeded standards was 45.7% compared to the overall state population at 43.0%; the LWES population was 2.7 percentage points higher than the state, and well above Baird's estimation for performance. Of equal importance, LWES has only 9.5% that Did Not Meet standards while 14.3% of the state population are in the category of Not Meeting the standards, closing the gap at both ends of the performance measures.

Given research that identifies teachers as a salient contributing factor in student outcomes, this examination of student achievement suggests the effectiveness of teachers prepared through the PDS model as well as their positive impact on student achievement. Students from sub-populations who often underperform on standardized assessments did better at LWES than their counterparts across the states.

## **Discussion**

This study compares performance of third graders at LWES to those across the state of Maryland. While these are not statistically equal groups on any measure, all members of the population were included. In the end, third grade students at LWES outperformed their peers from other schools, including those with lower percentages of FARMS and ELLs. LWES students' strong performance in math across all subgroups and economic conditions must credit the school's effective instruction. The authors recognize that no one single lever will improve a school's academic performance. However, the research literature supports that teachers are a major contributing factor in student achievement and that long, coherent training and practice is an effective strategy to improve teacher performance and student learning. The contributions of the school to individual teacher's performance and individual teacher contributions to overall school performance is difficult to separate, but the findings are encouraging that available measures can establish linkages among cadres of teachers and their students' performance.

The findings support both the value of PDS programs and UMBC education programs in the superior performance of the school against similar populations state-wide. The contribution of PDS programs through the involvement of interns prior to their employment at the school and the long-term development of a teaching staff through the internship process yields substantial success in comparison to similar student populations throughout the state of Maryland. The PDS model offers a pathway for teacher development and school achievement, and the PDS standards require assessment of PDS impact on student achievement that is often difficult to assess. The use of publicly available data from the school forms a basic if imperfect source for developing reviews of programs. The development of a longitudinal database now being created by the state may offer additional data for comparisons both within and across schools with similar programs or similar demographics. Until then, this type of analysis provides some insight into the potential benefit of the PDS model for student outcomes.

## **Policy implications**

While we agree with our accrediting bodies that it is ideal for educator preparation programs to assess the effectiveness of their graduates, we know first-hand the challenges of doing so within our current system. Professional Development Schools not only provide preservice teachers with rich, supported teaching experience and IHE faculty with opportunities to better understand the current context of teaching, they also provide a potential avenue for studying our graduates' impact on student learning. The UMBC Department of Education will discuss these findings with our PDS partners and encourage them to develop extended, qualitative and quantitative analysis in collaboration with the department.

## **Future studies**

While it would be preferable to compare the school's math scores from before the establishment of the partnership to after its implementation, it was unfortunately impossible to do so because the PARCC assessment was not in use when the



partnership was established in 2007. There are clear limitations to using student achievement data as the sole means of evaluating teachers and education preparation programs (Darling-Hammond, 2020). In addition to being difficult to access the needed data, many have called into question the ability of standardized tests to adequately capture all that students learn and teachers teach. This is why an in-depth qualitative study of the internship and beginning years of teachers at LWES as outlined in the remaining phases of our study is necessary to provide more specific findings that could support and expand our understanding of the potential impact of PDS on teacher preparation. Additional studies of other settings where UMBC has a major presence could determine if these findings are consistent across other schools.

## References

- Baird, K. (2012): Class in the Classroom: The Relationship Between School Resources and Math Performance Among Low Socioeconomic Status Students in 19 Rich Countries. *Education Economics*, 20(5), 484-509.
- Clemson-Ingram, R. & Fessler, R. (1997): The Maryland Redesign of Teacher Education: A Commitment to System Reform. *Action in Teacher Education*, 19(1), 1-15.
- Darling-Hammond, L. (2020): Accountability in teacher education. *Action in Teacher Education*, 42(1), 60-71.
- Fraser, J. & Lefty, L. (2018): *Three Turbulent Decades in the Preparation of American Teachers: Two Historians Examine Reforms in Education Schools and the Emergence of Alternative Routes to Teaching*. Institute for Education Policy. Johns Hopkins University School of Education.
- Opper, I. (2019): *Teachers Matter: Understanding Teachers' Impact on Student Learning*. Santa Monica, CA: Rand Corporation.
- Polly, D., Wang, C., Martin, C., Lambert, R., Pugalee, D. & Middleton, C. (2018): The Influence of Mathematics Professional Development, School-Level, and Teacher-Level Variables on Primary Students' Mathematics Achievement. *Early Childhood Education Journal*, 46(1), 31-45.
- Professional Development School Assessment Framework for Maryland (2007): Maryland: Maryland State Department of Education Program Approval and Assessment Branch.
- Putnam, H. & Walsh, K. (2019): *A Fair Chance: Simple Steps to Strengthen and Diversify the Teacher Workforce*. Washington, D.C.: National Council on Teacher Quality.
- Rivkin, S. G., Hanushek, E. A. & Kain, J. F. (2005): Teachers, Schools, and Academic Achievement. *Econometrica*, 73(2), 417-458.
- Ronfeldt, M., Matsko, K. K., Greene Nolan, H. & Reininger, M. (2018): *Who Knows if our Teachers are Prepared? Three Different Perspectives on Graduates' Instructional Readiness and the Features of Preservice Preparation that Predict Them*. Stanford, CA: Stanford Center for Education Policy Analysis.
- Sonnenschein, S., Stites, M. L. & Dowling, R. (2020): Learning at home: What preschool parents do and what they want to learn from their children's teachers? *Journal of Early Childhood Research*. <https://doi-org.proxy-bc.researchport.umd.edu/10.1177/1476718X20971321> (Accessed 15 December 2020).
- Tucker, M. (2018): Teachers Colleges: The Weakest Link. *Education Week*. <https://www.edweek.org/teaching-learning/opinion-teachers-colleges-the-weakest-link/2018/11> (Accessed 11 February 2021).

- Walsh, K. (2001): *Teacher Certification Reconsidered: Stumbling for Quality*. Baltimore, MD: Abell Foundation.
- Walsh, K. (2020): *Teacher Prep Review: Clinical Practice and Classroom Management*. Washington, D.C.: National Council on Teacher Quality.
- Xu, Z. & Swanlund, A. (2013): *Estimating teacher contributions to student learning: The role of the school*. American Institutes of Research. <https://www.air.org/resource/estimating-teacher-contributions-student-learning-role-school-component> (Accessed September 2018).
- Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B. & Shapley, K. (2007): *Reviewing the Evidence on how Teacher Professional Development Affects Student Achievement*. Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Assist. Prof. Dr. Cheryl North, University of Maryland Baltimore County, USA

Dr. Kimberly C. Feldman, University of Maryland Baltimore County, USA

Assist. Prof. Dr. Michele L. Stites, University of Maryland Baltimore County, USA

Prof. Dr. Eugene C. Schaffer, University of Maryland Baltimore County, USA