

# UMBC

AN HONORS UNIVERSITY IN MARYLAND

## **Impact Study: Laurel Woods Elementary School-UMBC Professional Development School Partnership**

Plan and Phase I study of public domain documents  
with a focus on mathematics

### **ABSTRACT**

This case study presents analysis of the mathematics performance of students of Laurel Woods Elementary School. Of interest is the contribution of teacher education graduates on Laurel Woods and Laurel Woods contribution to the growth of UMBC teachers from pre-service through their years of service. Phase I results of the study report on teacher impact on the mathematics performance of students at Laurel Woods Elementary School in the 3rd grade. Comparisons with the state's performance are made for the entire population and for subgroups within the grade. This is the first of three proposed studies examining impact of teachers on student learning and school environment.

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**Phase I Impact Study – Laurel Woods Elementary School-UMBC**  
**Professional Development School Partnership**  
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**Background:**

The UMBC Education Department works with multiple elementary and secondary schools in five school districts throughout the Baltimore-Washington area to educate preservice teachers called teacher candidates for the state's schools. The teacher candidates primarily work in schools designated as Professional Development Schools (PDS). A PDS may involve single or multiple schools, school systems and UMBC and may take many forms to reflect specific partnership activities and approaches to improving both teacher education and PreK-12 schools. One of these PDS is Laurel Woods Elementary School (<http://lwes.hcpss.org/>) in Howard County Maryland.

Laurel Woods/UMBC Professional Development School is a collaboratively planned and implemented partnership for the academic and clinical preparation of interns and the continuous professional development of both school system and UMBC faculty. The focus of the PDS partnership is improved student performance through research-based teaching and learning. One strategy to meet this goal was to develop an effective teaching force for the school. Laurel Woods Elementary School (LWES) was selected as a PDS after discussions with the Howard County Public School System's Office for Professional Development Schools and the administrators and teachers of LWES who determined that the school population and UMBC teacher candidates could mutually benefit from the collaboration.

Laurel Woods started an Early Childhood and Elementary Education Professional Development School partnership with UMBC in 2007. The collaboration has UMBC provide a University Coordinator to work in the school one day a week. The school selects a faculty member to serve as the PDS site liaison facilitating communication and professional development opportunities between the university and school partners. As a part of this partnership Laurel Woods hosts student interns completing their early childhood and/or elementary field experiences. Student interns participate in a 2-semester field experience/internship rotation. In their first semester they participate a 1 ½ to 2 day/week experience in one classroom. The second semester they teach 5 days a week in a classroom with a mentor teacher who is jointly selected by the school and university. In the second semester, the teacher candidate assumes all duties of the teacher for part of the semester.

Graduates of UMBC are often employed in the Howard County Public School System (HCPSS) and specifically at LWES based on their successful internship. While interns receive positions across the district, in the 2017-2018 academic year LWES employed six UMBC graduates of their thirteen 1<sup>st</sup> through 3<sup>rd</sup> grade teachers representing almost half of the classroom teachers in these early grades.

## Laurel Woods Impact Study

An impact study was designed by UMBC research team in three phases to examine the effectiveness of the PDS program and UMBC graduates on student learning. The use of three phases reflect the complexity of examining the performance of a school, the number of data sources, questions addressed in the study and the cost of implementation. At this time not all phases have been completed. Phase I, the focus of this paper, draws entirely on public data. In the future, with collaboration and co-designing of Phase II LWES and UMBC may undertake a qualitative study intended to understand the mechanisms and strategies used by the school to build their system of instruction and induct teachers into the school environment. Phase III, if implemented, looks at specific student learning and teacher impact.

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 inobtrusive strategy (Schaffer and Stringfield, 1980). 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 Howard County Public School System or UMBC Institutional Research Board approval. The study did not intrude on the school routines or reduce instructional time and, finally it responded to Council for the Accreditation of Educator Preparation (CAEP) accreditation standards by linking standardized testing outcomes of students to instruction.

UMBC research team studied the performance of students in third grade rather than all grades as UMBC's graduates contributed extensively to student learning and the student level of test performance in the first three grades and because 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, could be an effective instructional team for the first three grades of school. The research team also recognized that the school environment and support contributes to the teachers' accomplishments just as teachers enhance the school's successes.

The rationale behind this position comes from the research conducted by the Rand Corporation (2012) and others (Xu & Swanlund, 2013; Stringfield, Reynolds and Schaffer, 2012, Rivkin, Hanushek, & Kain, 2005; Sanders & Horn, 1998; Sanders & Rivers, 1996.) These and many other studies support that teachers and schools contribute to student learning. Further coherent, long-term professional development is demonstrated to be an effective implementation model suggesting 50 to 80 hours of practice (Bush, 1984, Truesday, 2003) after implementation leads to the most effective and long-term impact of a curriculum or an educational reform (French, Banilower, 2002

Yoon et al. 2007). Finally, the longitudinal nature of mathematics curriculum supports the building of a coherent learning of mathematics concepts and skills. To the UMBC faculty, this strategy 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.

As noted in the Rand study

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.

However, it is important to consider that the teacher performance is nested within the school and that not examining difference between school performance incorrectly attributes all change to the individual teacher (Xu & Swanlund, 2013). This is supported by recent research from Ronfeldt., Matsko, Greene, Nolan, & Reininger (2018) which indicated one major element of success is the employment of pre-service teachers in school where they had interned. Given these understandings about the contributions and interactions of schools and teachers, two central questions were posed for this study:

1. What evidence is available to measure the success of the schools and teachers from the UMBC teacher education at Laurel Woods Elementary School?
2. What is the impact of the UMBC educated teachers employed by Laurel Woods Elementary School on the school and student learning?

## **School Population**

LWES serves 611 students from kindergarten through fifth grade from the North Laurel community of Howard County Maryland. There are four or five classrooms at each grade level with an average of 22 students in each classroom. In addition to classroom teachers, students receive services from specialists such as teachers in the arts and physical education as well as support staff with responsibilities for mathematics and literacy.

The students represent a diverse ethnic and economic community that includes 52.1% identified as African American, 23.7% Hispanic, 9.5% Asian 7.5% white, 0.3% Hawaiian, 0.3% Native American and 6.6% as two or more races. 59.7% of the students

receive free and reduced meals<sup>1</sup>, 9.0 % receive services for English language learning, and 9.5% special education services.

Table 1

School and State Demographics

Category	Laurel Woods Elementary Percentage	State Average Percentage (totals more than 100%)
African American	52.1	33.7
White	7.5	37.3
Hispanic	23.7	27.3
Asian	9.5	06.5
2 or more races	6.6	04.5
Hawaiian	0.03	00.1
Native American	0.03	00.2
FARMS	59.7	42.69
ELL	9.0	06.94
Special Education Service	9.5	11.9

**Data Sources and Procedures**

Each phase of this study can contribute a perspective on the school and student learning. For Phase I public records available to the university researchers on state and local websites and related institutional reports from HCPSS form the basis of the report. Phase II may include interviews and focus groups with teachers, administrators and UMBC personnel assigned to the school. Phase III was to be data requested in Fall of 2015 by the UMBC, but data on individual teachers’ reviews or students’ performance were not made available by the school district for privacy reasons. This is an ongoing conversation with the school district.

The Department of Education determined it could go forward with the Phase I to examine the performance of students in the school. For Phase I public domain data was collected in June of 2018 to establish a baseline information on the school and to determine what questions might be most appropriate to ask university personnel, teachers and administrators in Phase II

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 a system in place, nor do they currently have data systems that permit the tracking of teacher candidates once they have left their certification program. With test

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<sup>1</sup> **Title1** schoolwide program is a comprehensive program used to upgrade the complete educational program in a **Title 1 school** thus raising academic achievement for all the students. The schoolwide program is available to **schools** with a student base where at least 40% come from low-income families

performance on a teacher-by-teacher basis not available currently in Maryland, UMBC used school-level data as a proxy by examining the test performance by the grade level and the subpopulations within the grade in the school with high concentration of UMBC trained teachers. These findings are then compared to state level data.

### Phase I Initial Results

Based on reviews of literature researcher assessment of learning attribution. The decision to use LWES was determined by the number of UMBC teachers of record. The data presented for LWES examines 3<sup>rd</sup> grade and focuses on African American and Hispanic sub populations which were reported independent of the overall school population. The third-grade scores were selected because they incorporate learning at the first and second grade and can, in part, be attributed to those teachers. There are no state or nationally normed tests are available to the researchers for students in 1<sup>st</sup> and 2<sup>nd</sup> grade. Upper grade scores were not reviewed as Laurel Woods has not employed many UMBC teachers in those grade levels.

LWES with a majority African American population (52.1%) and large minority Hispanic (23.7%) and Asian (9.5%) populations out performs the state on almost all categories in mathematics based on 2017 state data<sup>2</sup>. Furthermore, LWES has a Free and Reduced Meals (FARMS) population in excess of 51% which according to studies (Baird, 2012) accounts for a 18% of lower performance scores. Baird argues that the difference between high and low SES performance is one standard deviation. However, the findings in Table 1 indicate that the state average was 0.4 % of students greater than LWES at the exceed level while LWES has a 3.2% higher rate than the state average in the Met category. Overall, LWES percentage of students that meet or exceeds the state 45.7 to 43.0 or 2.7 percent higher than the state average and well above Baird estimation for performance. Of equal importance LWES has 9.5% not meeting assessments while 14.3 of the state are in the category of Not Met closing the gap on at both ends of the performance measures.

Table 2  
2017 PARCC Assessment Results for Mathematics Grade 3

	Exceeds	Met	Approached	Partially	Not Met
State Average	11.8	31.2	24.5	18.2	14.3
Laurel Woods	11.4	34.3	24.8	20.0	9.5

Similarly, the LWES African American population percentile presented in Table 3 exceeds the African American state percentile in the Exceeds and the Met category

<sup>2</sup> Note: School and state-wide 2018 data will be included in spring of 2019.

nearly doubling the state average for exceeds and 10% higher for the Met category. The state percentile for Exceeds and Met combined then is 26% while LWES is 38.8% or over 12% above the state percentage. Similarly, the Not Met percentage of state African American students is 22% while LWES 10% which is 12% lower than other African American students in Maryland and 4.1% lower than the overall state population.

Table 3  
Black/African American PARCC Assessment Results for Mathematics Grade 3

	Exceeds	Met	Approached	Partially	Not Met
AA State Average	3.6	22.4	27.1	24.3	22.6
AA Laurel Woods Average	6.1	32.7	22.4	28.6	10.2
Overall State Average	11.8	31.2	24.5	18.2	14.3

The LWES Hispanic population in Table 4, exceeds and met categories of the PARCC tests were far ahead of Hispanic state percentiles. With 12.5% vs 4.6% of the students in the exceeds category and 29.2% vs. 23.7% in the Met category for Hispanic students statewide. For LWES Hispanic students 41.7% students met or exceeded the state percentile of Hispanic students of 28.3% percent. The not met was less than half of the state percentile of 8.3 % vs. 19.6 %. The met and exceeds percentage for all students was 43% vs. 41.7 % for LWES Hispanic students.

Table 4  
Hispanic PARCC Assessment Results for Mathematics Grade 3

	Exceeds	Met	Approached	Partially	Not Met
Hispanic State Average	4.6	23.7	27.1	25.0	19.6
Hispanic Laurel Woods	12.5	29.2	37.5	12.5	8.3
Overall State Average	11.8	31.2	24.5	18.2	14.3

### Phase I Conclusions

LWES students' strong performance across academic measures across all subgroups and economic conditions must credit the school's effective instruction. The findings are

basically a school-level value-added measure (VAM) using the state data as the comparison population. The 3<sup>rd</sup> grade data was used as over almost 50% of the grade 1st through 3rd teachers are graduates of UMBC.

There are many elements that can contribute to this success. The research literature supports long coherent training and practice as an effective strategy to improve student learning. The contributions of the school to individual teacher's performance and individual teacher contributions to overall school performance is difficult to separate (Xu, Z & Swanland, 2013). The findings are encouraging in 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.

Additional studies of other settings where UMBC has a major presence could determine if this finding is consistent across other schools and support this finding. Additional grade levels and studies of other subjects would offer additional perspectives on school and teacher performance. Longitudinal studies of subjects, grades within these schools offer additional potential support for these findings and may suggest additional areas to examine. The Department of Education will discuss these findings with our PDS partners and encourage them to develop extended qualitative and quantitative studies as described for Phase II and Phase III in collaboration with the department.

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