



**Chadwick Elementary School:
Case of a Maryland Improving School**

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EXECUTIVE SUMMARY

This case of a high performing school is one of 12 school cases studied as part of a comprehensive study of school finance adequacy in Maryland. The purpose of the cases is to identify the elements of the improvement strategies of the schools studied and to compare them with the elements of the school improvement strategy embedded within the evidence-based (EB) school funding model and then, if needed, to make adjustments in the EB model to reflect the Maryland context.

Four categories of schools were selected for case studies:

- High performing schools, i.e., schools with a composite score of at least 90 percent of students performing at or above proficiency.
- Improving schools, i.e., schools that had increased their composite percentage of students performing at or above proficiency by at least 50 percent over a six year period.
- Schools that had improved the composite assessment scores of various subgroups (English language learner (ELL) students, minority students, etc.) by at least 50 percent over a six year period.
- Schools that had reduced the achievement gap of their composite assessment score between free and reduced meals (FARM) and non-FARM students by at least two standard deviations over a six year period.

Chadwick Elementary School is an example of the first category of schools - a high performing school.

The case was developed, in Fall 2015, through interviews of the principal and key teachers, review of informal documents provided by the school principal and information on the school's curriculum and instructional program on the school's web site. In Fall 2014, Chadwick Elementary School in Baltimore County enrolled 548 students in prekindergarten through fifth grade. The school is 98.5 percent minority (49 percent African American) and 80.5 percent free and reduced price lunch. In 2014, 97 percent of its students performed at or above proficiency in reading, math and science.

How did the school produce these dramatic results? First, Chadwick is a highly collaborative school, with a skilled and effective faculty. It is a data-driven school. Nearly everyone interviewed said they develop lesson plans based on student performance data, provide differentiated instruction based on data, and evaluate results based on data.

Drawing from the summary of the case, the key factors behind the school's results were:

- Smart and capable teachers. Top teacher talent or “teacher talent—cubed” as one teacher put it, is central to Chadwick's success. The principal spends hours recruiting teachers, interviewing and observing them, developing them after they are hired, and working hard to

retain them. The goal is to equip every teacher with the skills needed to tailor the reading, math, and science curriculum to the needs and interests of the students in the school.

- Small class sizes. With a school-wide average class size of 21 students, Chadwick creates an environment where teachers can work with small groups of seven or fewer students in their classrooms. Small class sizes also enable core teachers and several push-in teachers to provide the extra help many students need to achieve to proficiency levels.
- Strong principal leadership. As most teachers put it, the principal is “tough and understanding.” The principal has high expectations for teacher performance and provides lots of support. The principal is strict but gives teachers lots of independence; teachers have the freedom to make lessons more creative, to link the issues and topics to student interests, and to make learning interesting. The principal holds teachers accountable for student performance (irrespective of socioeconomic background) and for keeping pace with the curriculum to ensure that all units are taught to all student groups each year. Pace and full curriculum coverage are important because students build on each previous year as they move upward through the grade levels.
- Collaborative culture. Collaboration happens at all grade levels through grade-level teams, includes all teachers, and occurs all the time. The school has a strong collaborative culture, with multiple forms of both formal and informal collaborations. Nearly everything in the school is done collaboratively, including elective and extra help teachers.
- Commitment to the school and to ALL students. Chadwick teachers are not just concerned with students in their class or grade, but with students across the entire school. This includes commitment to student academic needs, regardless of student background. Teachers see the school’s students as students, not as ELL, FARM, minority, immigrant, or any other category. They are just students with different needs, all of whom can benefit from differentiated instruction.
- Multiple interventions. Interventions provide extra help for students beginning in prekindergarten, then continuing with extra help push-ins in kindergarten through fifth grade classrooms and small groups. Interventions are designed to ensure that no student falls behind.
- Accountability for results. For everyone in the school—teachers, administrators, and students—accountability for results is the mantra. Whatever the curriculum, or the “Chadwickified” pedagogy, the test is whether it worked—whether students performed to proficiency. When issues emerge, teachers go back to the drawing board and change the curriculum and instructional approach to improve results for the next year. The school is relentless in its mission to educate every student to a performance level that is proficient or higher.

The case concludes that the overall strategies used by Chadwick to produce its high level of performance are aligned with the improvement system embedded within the EB model, and do not require any changes in the EB model to reflect specific differences in how this school produced its high level of performance.

INTRODUCTION

Set in a working-class community in the Baltimore County school district, Chadwick Elementary School is about 13 miles west of downtown Baltimore, just off Route 695. In fall 2014, Chadwick enrolled 548 students in prekindergarten through fifth grade. As will be shown, Chadwick is a high performing school with 97 percent of its students achieving at or above proficiency in a composite math, reading, and science score. Overall, Chadwick is highly collaborative school, with a skilled and effective faculty. It is a data-driven school. Nearly everyone interviewed said they develop lesson plans based on student performance data, provide differentiated instruction based on data, and evaluate results based on data.

Class sizes averaged 21 students, with the following average class sizes by grade level:

Table 1: Chadwick Elementary School Class Sizes

Grade Level	Class Size
Prekindergarten (2 classes)	20
Kindergarten (5 classes)	18
First (4 classes)	21.5
Second (4 classes)	23
Third (3.5 classes)	22
Fourth (3.5 classes)	25
Fifth (4 classes)	20

There were five sections of kindergarten classes and four sections for each grade one through five. Grades three, four, and five also had combination sections, grouping grades three and four and grades four and five. The school has two half-day prekindergarten programs with 20 students in each class.

All students walk to school. Though the campus is surrounded by modest, split level homes, the principal explained that the vast majority of attending students live in relatively large apartment buildings a few blocks farther away. Many apartments house multi-family and even multi-generation Asian, Hispanic, or African American families.

The school is 98.5 percent minority, with African Americans comprising 49 percent of students, Asians 34 percent, and Hispanics 11 percent, though the latter demographic is growing. Students come from 13 different countries and speak 18 different home languages. The majority of Asian students are from India, Pakistan, Nepal, and Vietnam, and many members of Asian family households held professional jobs in their native countries. A large number of the students are from Muslim families, and many of these families attend a local area mosque. There are many multi-racial students.

A large majority of students, 80.5 percent, are FARM eligible compared to a state average of about half that, and a county average of 48 percent. ELL students comprise 21.1 percent of students and, according to the principal and many teachers, this percentage will probably rise as the Hispanic population grows, as many are from immigrant families who do not speak English.

Students receiving special education services make up 8.9 percent of all students, compared to a statewide figure of 12 percent.

Chadwick Elementary has been a high-performing school for the past several years. More than 95 percent of students consistently perform at or above proficiency level in math, reading and science on state tests, and Chadwick even reaches 100 percent proficiency in some subjects and grade levels (e.g., math in 2012). This case investigates how Chadwick has produced such results. The case has 11 sections: 1) school performance, 2) school staffing, 3) goals, 4) school schedule and teacher teaming, 5) curriculum and instructional program, 6) assessments, 7) extra help strategies for struggling students, including special education services for children with moderate and mild disabilities, 8) professional development, 9) school culture and leadership, 10) summary, and 11) the degree of alignment between the school's strategies and the school improvement strategies embedded in the EB Funding Model.

SCHOOL PERFORMANCE

Table 2 shows the composite data used to select Chadwick Elementary for a case study. The percentage of students who are proficient or advanced across all subjects (reading and math in grades three through five, and science in grade five) was averaged to produce a number—percent proficient/ advanced—for each year from 2007 to 2012. For 2013 and 2014, only the “All Students” results are presented. During this latter two-year time period, Maryland's curriculum standards changed, but the test did not, which led to a drop in state-wide test score results. Schools that had a drop of less than one standard deviation between 2012 and 2014 were given preference for being included as a case study. Chadwick's composite test scores did not drop for these two years but remained high at 96 percent in 2013 and 97 percent in 2014.

The data demonstrate the effectiveness of this school. In 2012, on average 95 percent of all students scored at or above proficiency on the math, reading, and science composite score. The results for students from backgrounds of poverty, defined here as students eligible for the federal free and reduced-price meals program, was 96 percent proficient or advanced. The result for ELL students was 100 percent, and the result for non-Asian minority (mainly African-American and Hispanic) students was 94 percent. Put differently, demographics had virtually no impact on student performance at Chadwick Elementary School. Regardless of race, home language, immigrant status, or socioeconomic status, 95 out of 100 students learned to proficiency across reading, mathematics, and science at this school. Fully 88 percent of students with individualized education programs (IEPs) scored at or above proficiency. More details on Chadwick student performance can be found at: <http://www.mdreportcard.org/Entity.aspx?k=030113>.

This case describes how Chadwick produced such results. It draws from interviews with the principal and eight teachers, and from several documents, some provided by the principal and others drawn from the school's website. The principal provided PowerPoint presentations on several issues, including for example, the school's improvement plan, its approach to “learner centered instruction,” and its reading program. The web site provided information on the school's curriculum and instructional program, as well as its after school programs.

Table 2: Chadwick Elementary School Performance, Maryland School Assessment (MSA), 2007-2014*

Average School-Wide Percent Scoring Proficient/Advanced in Reading, Math and Science								
Performance Level	MSA 2007	MSA 2008	MSA 2009	MSA 2010	MSA 2011	MSA 2012	MSA** 2013	MSA** 2014
All Students	84	92	94	93	94	95	96	97
Free and Reduced-Price Meals (FARM) Students	83	90	96	92	94	96	NA	NA
ELL Students	17	74	89	96	88	100	NA	NA
Special Education Students	33	-	95	86	88	88	NA	NA
Non-White/Non-Asian Students	85	92	95	92	92	94	NA	NA

A “-“ indicates either no students or the number of students was suppressed due to too few students in the category.

*Assessment data by student subgroup for 2013 and 2014 were not available at the time this report was written.

SCHOOL STAFFING

Staffing classrooms with top quality teachers is a prime strategy for Chadwick. When asked how the school produced its student performance results, the first thing the principal said was, “We hire only the best teachers; we find top talent and we keep it. We hire smart people, work with them over the summer, and provide them the assistance they need to be successful throughout the school year.” Teachers backed up this claim, with one replying, “teacher talent—cubed!”

Teachers also work in what teachers call tightly knit, grade-level teacher teams, which helps provide them with support from peers throughout the year. Over time, this practice also has led to a very stable staff, so the school provides continuity of effective instruction in every class, every year.

Further, according to the principal and the teachers, the school seeks to place the most effective teachers in the classrooms and with the students and student groups that need the most help.

The school also values content specialization in its staff. The principal has an advanced degree in reading from Johns Hopkins University and has developed several segments of the school's reading program. Several teachers in the early elementary grades have graduate degrees in reading. At the upper elementary grades, rather than grade level teachers providing instruction in all subjects, the school has some teachers providing instruction in just one subject. The school calls this "departmentalization" for reading and math. In grades four and five, only a math resource teacher teaches mathematics, and only a reading resource teacher teaches reading.

Table 3 shows the school's staff by full-time equivalent (FTE) position. Administration consists of a principal, an assistant principal, and two secretaries in the central office.

The school has a prekindergarten program that includes 40 students—20 in a morning program and 20 in an afternoon program. One prekindergarten teacher and one prekindergarten aide provide program instruction. The teacher and aide also get support from a paraprofessional, who works with parents of prekindergarten students. Thus, a large number of the school's students have access to prekindergarten before they enter the regular elementary program.

The staffing configuration of the school shows the importance of the Chadwick's reliance on effective core teachers. Table 3 shows that the school has 24.2 core teacher positions for 508 students in kindergarten through grade five. Core teachers are the grade-level teachers who teach reading, math, science, and social studies. For kindergarten through fifth grade, this staffing equates to an average class size of approximately 21 students. However, as noted above, average grade-level class sizes vary from 18 in kindergarten to 25 in grade four, with other grades in the low 20s. The principal said she uses a significant portion of the school's Title I funds to hire three core, grade-level, classroom teachers to help keep class sizes low. (Most teachers interviewed stated that "small class size," their words, was one of the key factors behind the school's effectiveness).

The school also employs "elective," or "specials" teachers to provide instruction in art, music, physical education, library, and technology. The number of teachers who provide this instruction—4.2, including the librarian who teaches some of the specials class sections—is in line with the school having teachers instruct for five of six daily hours of student instruction. A typical staffing standard, and the EB model formula, for the number of specials teachers would be to have 20 percent specials/elective teachers above the total number of core teachers, which would equal 4.8 positions for this school (0.2×24.2).

When asked about instructional coaches, the principal said that she and a grade four math expert teacher acted as the school's instructional coaches. Interviews documented that this was the case, with the assistant principal doing the bulk of school management. However, some portion of the school's math, reading, ELL, and technology resource teachers also provide mentoring or instructional coaching. Table 3 above shows 1.8 instructional coaching positions in addition to the principal (who is counted only once in the principal line, even though the principal provides coaching services).

Table 3: Staffing in Chadwick Elementary School

Category	FTE
<i>Administration</i>	
Principal	1.0
Assistant Principal	1.0
Clerical	2.0
<i>Prekindergarten Program</i>	
Licensed Teachers	1.0
Instructional aide	1.0
Prekindergarten parent helper	1.0
<i>Main Program</i>	
Core Teachers	24.2
Elective Teachers: 1.4 Music, 1 Art, 1 PE, 0.8 Tech	4.2
Instructional Coaches: 0.5 Math, 0.5 Tech, 0.5 Reading	1.5
Special Education Self-Contained (Severe and Profound)	1.0
Special Education (Mild and Moderate)	1.5
ELL teachers	1.5
Tutors/Tier 2 interventionists: 1 Each, Reading and Math Resource Teachers	2.0
Librarian	1.0
<i>Aides</i>	
Instructional: Title I	1.0
Special Education Self-Contained (Personal Assistant for Child with Visual and Physical Disabilities)	1.0
Special Education, Inclusion	2.0
<i>Pupil Support</i>	
<i>Licensed</i>	
Guidance Counselor	1.0
Nurse	1.0
Psychologist	0.4
Occupational Therapist	0.4
Physical Therapist	0.2
<i>Non-licensed</i>	
Behavioral Specialist	1.0
Lunchroom Staff: 1 Manager and 3 Assistants	4.0

The school has several categories of “extra help” staff. The school has 1.5 ELL teaching positions for its approximately 110 ELL students. Chadwick has two Tier 2 intervention staff consisting of one math resource teacher and one reading resource teacher. Both of these teachers

spend most of their time in classrooms giving students extra help with instruction.¹ Chadwick has 1.5 teaching positions for students with mild and moderate disabilities, and one teacher with a self-contained classroom of seven children with more severe disabilities.

The school has three paraprofessionals providing instruction. Two paraprofessionals are special education inclusion individuals and one is funded by Title I dollars. Two of these three instructional aides have teaching licenses, but work at the salaries of instructional aides. It could be argued that the school has only one non-licensed, paraprofessional instructional aide, an atypically low number for a school of Chadwick's size and student demographics. In addition to the three instructional aides, the school also has an aide who provides all-day assistance to one student with visual and physical disabilities.

These modest numbers of "extra help" staff bolster the school's claim that much of its success derives from the instructional effectiveness of its core teachers along with multiple early interventions.

The school has a full coterie of pupil support staff, including one guidance counselor, one nurse, and one position split among three individuals who provide speech/language, occupational, and physical therapy. There is also a paraprofessional providing family outreach and parent support for the regular school program.

SCHOOL GOALS

The school goal has been to educate *all*, i.e. 100 percent of children, to proficiency in the Maryland College and Career Ready Standards (MCCRS). It could be argued that educating 97 percent of students to proficiency basically meets this goal. And several subcategories of students (e.g. ELL) or subjects (e.g. math) actually met the 100 percent goal. For example, in 2012, 100 percent of fourth graders scored at or above proficiency in mathematics, what many would consider an outstanding achievement.

Over the years, the school has launched several programmatic initiatives to attain this aggressive goal of total proficiency. Most of these initiatives will be discussed below in various sections of the case. But the prime performance goal has been, and continues to be, having all students learn to proficiency.

Both the principal and nearly every teacher interviewed articulated this goal. Nearly all teachers said they are held accountable for student achievement to the State's proficiency standards. As a result, they gear their instruction to attain these proficiency goals for all students. The school also holds teachers accountable for curriculum pacing to ensure that all classrooms cover the major curriculum units included in Maryland's state standards for math and reading. The assumption is that all curriculum standards must be taught and learned in order for students to be successful on state tests.

¹ Tier 1 and Tier 2 interventions are used in the Response to Intervention framework. Tier 1 is core instruction and also includes accommodations and extra help provided by the regular classroom teacher. Tier 2 includes additional instructional support or attention beyond that provided by the regular teacher, but before a student is identified as having a disability and provided an IEP. Tier 3 consists of special education services.

The school has also prepared itself to change requirements according to the MCCRS in reading and math. Both the principal and many teachers expressed an awareness of Common Core curriculum and were beginning to incorporate elements of the MCCRS into their curriculum and instructional practices (e.g. reading informational texts and placing stronger emphasis on problem-solving in mathematics).

Chadwick wants to set a goal of having all students perform to proficiency on the new PARCC tests that are aligned to the Common Core and the new MCCRS. However, the school is concerned that its students might not perform as well as they have on the MSA because the new testing regime will be primarily online. The school does not believe it has the computer technologies necessary for all students to become adept at online test-taking, and fears that the new online format (not the new curriculum standards or new tests) may cause scores to drop.

SCHOOL SCHEDULE AND COLLABORATIVE TEAMS

The staff works from 8:25 a.m. to 3:25 p.m., a full seven-hour school day. The principal often meets with various staff early in the day before students arrive. The school doors open to children at 8:30, and the instructional day runs from 8:40 a.m. to 3:10 p.m.—a six-hour, 30-minute school day. Accounting for the 30-minute student and staff lunch period, Chadwick provides six hours of instruction for students.

Teachers provide instruction for five of these six hours. All teachers have 60 minutes of pupil-free time at some point during the day (50 minutes during which students receive instruction from elective or specials teachers and 10 minutes for transition to and from those classrooms). Importantly, all teachers at a grade level have the same pupil-free time period. For example, all kindergarten teachers have pupil-free time from 9:50 to 10:40 daily while grade five teachers have pupil free time from 10:50 to 11:40. Thus, there is time during the regular school day for grade-level teams to meet and collaborate on a daily basis.

During the pupil-free time for grade level teachers, students rotate among art, instrumental and vocal music, physical education, technology, some library instruction, and extra help sessions provided by a resource teacher. Thus, in addition to the considerable time students have each day for reading (2.0-2.5 hours), math (1.0-1.5 hours), and science and social studies (averaging an hour a day combined), students also get exposure to a full liberal arts curriculum that includes music and art.

This schedule allows the school to create multiple teacher teams. The core teams are the grade-level teams, each of which includes four teachers (five for the kindergarten team). The principal appoints one teacher as team leader for each grade-level team. These teams meet weekly, both formally and informally. Several teachers stated that they interact with their grade-level colleagues before school starts, after children leave, during the regular day, during pupil-free time, and also on the weekends. The seven-hour teacher workday for teachers helps allow for flexible before- and after-school collaboration.

Each grade-level team also meets once a month with the principal, assistant principal, ELL and special education teachers, and sometimes with the math and reading resource teachers. The

majority of the meetings are at least one hour long. All-day meetings are planned for October and April. During these sessions, the group discusses overall grade-level performance, monitors the progress of students with IEPs, identifies adjustments to be made in the instructional program, regroups students within classrooms, structures the deployment of extra help teachers (ELL, special education inclusion, reading and math resource teachers, etc.) in various classrooms, and engages in specific, grade-level professional development. The principal hires substitute teachers for these all day grade-level team meetings.

The school also has a leadership team comprised of the principal, assistant principal, grade-level team leaders, special education teacher, and ELL teacher. This team develops the school's formal goals and progress plan. This team assesses school-wide academic performance, conducts "root analyses" of problems identified through various test results, and devises school-wide solutions to these issues.

The assistant principal also leads a school support team comprised of the special education teachers, the reading and math resource teachers, the ELL teacher, and other teachers as needed. This team monitors students' academic progress, particularly for students with IEPs. The school support team also works with the IEP teams that develop student IEPs.

When asked what makes the school so special, most teachers and the principal noted the high level of collaboration among the staff, mentioning both formal and informal types of collaboration. Chadwick's various teams and groups help produce an unusually high level of teacher collaboration, most of it focused on making the curriculum and instructional program more effective.

CURRICULUM AND INSTRUCTIONAL PROGRAM

Across the school, all teachers use a systemic, school wide reading and math program. The principal and teachers said the reading and math curricula are now aligned to the MCCRS, including the curriculum standards developed by Baltimore County. Further, all teachers use two textbook series recently adopted in Baltimore County: *Reading Wonders* and *Math Investigations*. Both of these textbook series are "Chadwickified," i.e. adapted and augmented with materials that more directly meet the specific needs and interests of Chadwick's students. All classes in all grade levels are taught the entire core reading and math curricula. Classes are organized heterogeneously in kindergarten through grade two, along with some flexible ability grouping in grades three through five. Further, in grades four and five one teacher provides instruction for all the math sections and a different teacher provides instruction for all the reading sections. In other words, the upper elementary grades are partially departmentalized.

The school also is developing instructional approaches that are learner-centered rather than teacher-centered. This is a strategy the school believes will help students learn the higher-level MCCRS. The goal for learner-centered instruction is for the teacher to facilitate the learner's active engagement in constructing his or her own knowledge. This sort of engagement happens when students ask critical questions and when they seek information from reading materials to answer those critical questions. Students can then present analyses backed by data and text evidence. Learner-centered instruction can also include collaborative work with other students. It requires learners to acquire information by comprehending what they read, evaluating and

synthesizing findings, showing reasoning and use of evidence, and justifying concepts, claims, and conclusions. In mathematics, learner-centered instruction includes developing digital fluency, using mathematical knowledge to solve unique problems, and engaging in innovative problem-solving in situations where there are multiple solutions to problems.

Reading

There is one structured and systemic reading program across the school. The core curriculum is McGraw-Hill's *Reading Wonders*. This textbook series was designed specifically for Common Core Reading/Language Arts standards. The publisher claims each component and lesson is designed for effective and efficient Common Core instruction. The program provides support for:

- Building a strong reading foundation;
- Accessing complex text;
- Finding and using textual evidence;
- Engaging in collaborative conversations; and
- Producing daily responsive writing stemming from new learning.

Chadwick's reading time block is a minimum of two hours. During that time, the teacher presents a whole class lesson for 30 to 40 minutes. Students are then divided into three *flexible* groups: those students who need the most help, average learners, and more advanced students. Group size varies, but students who need the most help often have groups with the fewest number of students. Each group then works on three different activities: reflective journaling (writing), teacher instruction, and independent reading.

Reflective journaling is a daily informative assessment that incorporates material from reading, math, and science lessons. The teacher usually gives students a writing prompt for this activity. The group working directly with the teacher focuses on specific skills and knowledge tailored to the group's needs. This is a time when the regular classroom teacher can provide extra help with specific knowledge and skills and when a math or reading resource teacher, ELL teacher, special education inclusion teacher, or aide can also provide extra help.

During guided, independent reading, students select books from the classroom or school library that are both of interest to them individually and at their reading level. In some classes, ELL and/or special education teachers provide additional reading support. These teachers sometimes work with a small group, with smaller subsets of various groups, or even with individual students depending on student needs. All supplemental help is related to the skills and knowledge being taught in whole-class lessons by the grade-level teacher. The reading program emphasizes vocabulary development and comprehension in all grades, with an emphasis on phonics and reading fluency in kindergarten through second grade. A more extensive vocabulary and comprehension program is developed in grades three through five. Though all teachers use the county's reading program, they also substantially augment it with materials developed explicitly for the needs and interests of the students at Chadwick.

For the past several years, Chadwick has used a phonics program developed by its principal to address decoding patterns and a lengthy list of “lookalike words” (e.g. have, has, had, haven’t). This program emphasizes visual and auditory patterns with the goal of having students learn to discriminate between the words they hear and see. The program works toward this goal using daily dictation of phrases and sentences. It is repetitive work with the goal of building solid decoding skills—the foundation for word recognition and early reading fluency. The principal also developed an assessment called the Hess Word ID, to work in tandem with the phonics program. Teachers use the Hess Word ID to monitor student progress and adapt activities, words, and phrases to respond to what their students have learned and what they still need to master. During the past two years teachers have also begun implementing the Reading Wonders Program which was purchased by the Baltimore County School System.

Teachers all stressed the importance of phonics in kindergarten and grade one, also noting that some children need additional phonics help in grades two and three.

The Chadwick reading program further addresses vocabulary skills with the goal of developing an extensive vocabulary for all students. Staff believe this is especially important knowledge for students for whom English is a second language. Teachers help students develop vocabulary skills by teaching strategies like using context clues (e.g., pictures or surrounding sentences). The school also has developed a Greek and Latin root program to teach students word roots. This foundational knowledge can be used to recognize and learn new vocabulary. Vocabulary development also addresses homonyms, antonyms, synonyms, prefixes, and suffixes, which can be quite helpful for ELL students and native speakers alike.

Chadwick addresses reading comprehension with a focused effort to teach multiple comprehension skills. The main reading textbook is supplemented with various “high interest” books, organized by classrooms and reading levels. The goal is to give all students access to books at their reading levels and within their areas of interest. In past years, teachers found that too many of the reading passages in textbook series were of low interest to students and made it hard to engage the students in reading tasks. Adding leveled books to classroom libraries has helped students overcome this motivational challenge. This effort included stocking non-fiction books in math, science, and social studies subject areas, which helped broaden Chadwick’s reading comprehension program to include informational texts as well as standard English texts. Today, Chadwick teachers provide instruction in reading comprehension using a mixture of fiction and nonfiction texts, a practice that is very much in line with the demands of Common Core English/Language Arts standards.

Chadwick also adopted the Comprehension Toolkit, a set of strategies developed by national reading experts Stephanie Harvey and Anne Goudvis. The Comprehension Toolkit helps teachers engage students in their own learning by asking questions like, “What do you know? What do you think? How do you know?” Teachers then help students answer these comprehension questions using both fiction and nonfiction books aligned with the student interests and reading levels. Underlying this approach is the assumption that one can teach reading skills with any set of books as long as there is expert teaching. Developing expert reading teachers is a hallmark of this school.

Finally, Chadwick has invested substantial time in having teachers engage students in “close reading.” Close reading emphasizes using text analysis, reasoning, evidence, comprehension, evaluation, and synthesis to engage texts with increasing rigor. Though close reading started long before the implementation of the MCCRS, it still reflects one of the prime MCCRS reading standards that students will “read closely to determine what the text says explicitly and to make logical inferences from it, and cite specific textual evidence when writing or speaking to support conclusions from the text.” According to Chadwick’s principal and many teachers, such “evidence-based reading” helps students say or write some version of the following: “I know from my reading that [...]; I know this because of what I read on page [...]; the author stated [...].” To help students engage in the process of evidence-based reading, teachers first focus on text-dependent questions that focus on details in the text. Then the teacher raises deeper thinking questions about the text: “How do you know? Why did [...]? What caused [...]? What happened [...]? What happened just before and after [...]? How is this the same as [...]? How is this different from [...]?” The goal is to give students multiple skills and strategies to find evidence in the text and to then use that evidence for data-based conjectures, analyses, and conclusions.

Math

The math program follows Baltimore County’s math standards, which are linked to the MCCRS math standards. The county adopted the *Math Investigations* program, developed with National Science Foundation funding by TERC in Cambridge, Massachusetts. Pearson now publishes the *Math Investigations* series. All teachers in the school use this series. The content includes numbers and operations, geometry, data, measurement and early algebra, and automaticity for math facts. The goal is to address a set of core math topics in depth, with increasing depth and complexity each year as students move to higher grades.

The math program is a concept-based curriculum. Teachers have a “pacing guide” to help them cover all the units for a grade over a school year, but they also have some discretion in timing to ensure that previous concepts have been mastered before moving to a new unit.

The math block is between 60 and 90 minutes per day. After a whole class lesson of about 30 minutes, the class divides into three groups. During this time, the ELL teacher, special education inclusion teacher or aide, or math resource teacher usually assists the regular teacher. Again, because class sizes average 21, group sizes range from five to 10 with an average of seven. Nearly all teachers interviewed said these group sizes are small enough to allow for individualized assistance when needed.

As noted above, math is departmentalized in all of grade four and some of grade five, with one individual teaching all math sections, another teaching all reading sections, and a third teaching all science and social studies sections.

The “Chadwickifying” of the math program mainly comes through pedagogy—how the curriculum is taught. The goal is to teach math well, to teach it creatively, and to engage students in learning and problem-solving. Chadwick makes significant efforts to make math relevant to students. One teacher incorporates football examples into the curriculum. This same teacher also brings in grocery store advertising flyers, gives students a budget, and asks them to make a set of

purchases within the budget. This exercise can include sub-problems such as determining an item's cost when there is a buy-one-get-one or three-for-one sale. Another teacher has students write their own math problems. All teachers have students propose various solutions to math problems and defend these possible solutions during class discussions. A grade four teacher uses a character called Zero the Hero, who dresses up in a costume and engages the class in various types of math problems and solution strategies.

In the lower grades, teachers work together to develop common math lesson plans, teach those lessons on the same days, and then reflect on the results. As noted below in the section on assessments, teacher teams also use assessments to review student results on common, end-of-unit tests. These test results help teachers identify the degree of mastery and the effectiveness of the unit by grade-level, classroom, and individual student.

Another feature of Chadwick math is that most teachers understand the expectations for students entering a grade, the learning required within that grade, and the learning expected at the next grade level. For example, the current grade four math expert teacher has taught grade three math, and therefore, knows the material and the work needed to help students jump their math skills to proficiency in grade four. Similarly, the current grade five math teacher used to teach grade four math, and therefore, knows the material and the work needed to help students reach proficiency in grade five. Because there is considerable collaboration across grades, teachers can help ensure strong connections between the types of math instruction used across grade levels.

Science

For kindergarten through second grade, science is integrated into reading and math blocks. There also is a 50-minute science block for kindergartners and a separate 45-minute science block for third graders. Science is departmentalized for grades four and five, when it is taught for about 50 minutes per day.

Advanced Instruction

Chadwick has had a gifted and talented program for several years that has gained it recognition as a school with Excellence in Gifted and Talented Education (EGATE). The gifted and talented program was focused on accelerated instruction until recently, when the county shifted its gifted and talented philosophy to one of enrichment rather than acceleration. The school has received many awards for its program.

Additionally, beginning six years ago, Chadwick identified the 10 top readers in each kindergarten group and provided those students with accelerated reading instruction at every subsequent grade level. These students are able to move through the material at a faster rate than other students. In spring 2015, the school will graduate its first class of such advanced readers.

ASSESSMENTS

Chadwick makes use of multiple assessments, including the MSA (in past years), informal reading diagnostic tests, the Hess Word ID for phonics and spelling, the Dynamic Indicators of Basic Early Literacy Skills (DIBELS), NWEA Measures of Academic Progress (MAP),

formative assessments in both reading and math provided through the reading and math series purchased by the county, and common end-of-unit tests also provided through the core curriculum series.

MAP is a benchmark assessment administered online in September, January, and May. Because its results are provided the day after administration, faculty get the MAP data in the fall before the MSA results. MAP is used to assess student needs at the beginning of the year and to set goals for the school, classrooms, and individual students. Recent results showed that in math, there were issues both with math facts and with problem solving. In response, the school adopted a math facts program called Fast Math and created an after-school Math Club program to provide students with extra help.

The Hess Word ID assessment has been used in grades one through three to strengthen phonics, spelling, and vocabulary development over the past several years. This year, the county has invested in a new phonics program, the Reading Wonders phonics program, which is being fully implemented in all grades this school year.

The core curriculum formative assessments, which are teacher-administered, are the most often used interim assessments. The results of these assessments are discussed in collaborative, grade-level teams. Teachers use results to inform lesson plans for each curriculum unit and to track student progress through the course of each unit.

At the end of a unit, teachers administer common end-of-unit tests and then collectively analyze the results, asking these questions:

- How did the grade-level students perform overall?
- Were there differences across classrooms? If so, why?
- What changes should be implemented to improve instruction and attain better results?

EXTRA HELP STRATEGIES FOR STRUGGLING STUDENTS

Chadwick has a sophisticated and complex approach to providing extra help (i.e. additional instructional time and services) to “students who need more.” The school uses this phrase to identify students whom other schools might call “students who struggle to learn to standards.” To begin, Chadwick counts on its grade-level teachers to provide strong instructional foundations, including many Tier 1 interventions. These Tier 1 interventions are facilitated via small groups during reading and math instructional blocks.

The school schedule is structured so that the specialized teachers can provide push-in support in classrooms during the small group times. ELL teachers, special education teachers, math and reading resource teachers, and the three instructional aides (two of whom are licensed teachers) may also assist in classrooms at appropriate times to provide small groups, and sometimes individual students, with a variety of extra help as needed. For some students who need even more help, there is pull-out, one-on-one instruction. But two-thirds of the time this extra help happens within the regular classroom in small groups during reading and math blocks.

This represents a change for the ELL teacher who used to provide pull-out instruction in ELL. This teacher now works almost exclusively with students, both inside (approximately two-thirds of the day) and outside (approximately one-third of the day) the classroom. Her work addresses the extra help ELL students need to learn the skills and knowledge required by the core curriculum.

Moreover, when listening to various teachers describe this approach to classroom support, there was rarely reference to student subgroups, such as ELL or Title I students. Instead, the conversation was always about identifying differentiated student needs and complementing core instruction with both push-in and pull-out strategies. This way, Chadwick addresses student needs in appropriate whole group, small group, and individual contexts. The goal is to provide appropriate differentiated instruction based on student needs irrespective of demographics.

This complex strategy works quite effectively as evidenced by the low incidence of students with mild and moderate special education needs, and the even lower incidence of students with learning disabilities. These low incidences can be attributed to the fact that Chadwick provides so many preventative and extra help services—the prekindergarten program, the smaller class sizes for kindergarten (making small groups even smaller), and the multiple push-in and pull-out services (Borman & Hewes, 2003; Frattura & Capper, 2007; Levenson, 2012; Madden, Slavin, Karweit, Dolan & Wasik, 1993; Slavin, 1996). It also would be fair to say that the phonics-focused reading program is another factor in decreasing the numbers of students with learning disabilities or special education needs. The reading program is designed to educate students first in phonics, second in vocabulary and reading fluency, and finally in multiple comprehension strategies. This sequenced, systematic reading focus helps ensure that, regardless of a student's starting position, he or she receives reading instruction and extra help that leads to reading proficiency (Felton, 2010; National Reading Panel, nd; Torgeson, 2004).

In addition, Chadwick has developed multiple after-school programs to provide more instruction for students who need extra learning time. These programs include:

- Math Club. This program was created over nine years ago to help students identified as needing remediation in specific standards in order to achieve success.
- Homework Helpers Club. This program is about 15 years old. It is offered two days a week, for an hour each day, to provide homework help for students who have difficulty completing homework at home. The program funds two teachers along with middle school, high school, and federal employee volunteers. The Homework Club runs from October through April.
- Read at Home. This program encourages students and families to read at home.
- MESA Program. This program focuses on mathematics, engineering, and science, and has been operating as a challenging science, technology, engineering, and mathematics (STEM) program to provide critical thinking challenges for the school's fourth and fifth grade students.

PROFESSIONAL DEVELOPMENT

According to the principal and to most teachers, professional development in Chadwick is ongoing. It emanates first from intensive collaboration among all teachers, especially grade-level teams, where staff interact over student data to improve lesson plans and overall instruction.

Monthly faculty meetings include professional development on specific issues and topics. Recent emphases included a discussion of strategies for asking more detailed, higher order questions, and an analysis of the demands of the forthcoming Partnership for Assessment Readiness for College and Careers (PARCC) assessments. Notable components of professional development include:

- Professional development in reading largely provided by the principal but with contributions from the STEM teacher and members of the school leadership team.
- Professional development from the math teachers, stemming from best practices as well as conferences and professional development opportunities offered outside the school. Math teachers then provide this information for all teachers in the school.
- Assistance for individual teachers who may need extra help, provided during before-school, after-school, or regular school hours.

Several teachers in the school have worked over the summer on Baltimore County sponsored curriculum development and instructional strategy issues. This work has recently intensified because of the changes required by the new state standards. Chadwick also sponsored a summer professional development series on what is called the Chadwick Approach to the Daily Five of Reading, an instructional approach incorporating whole class lessons, small groups, responsive journaling, individual independent reading, and vocabulary development.

SCHOOL CULTURE AND LEADERSHIP

The culture of Chadwick can be characterized as one of accountability for results for all students, commitment to get the job done, collaborative and collegial work habits, dense instructional leadership, and a professional orientation to the job.

The principal holds teachers accountable for student performance and for maintaining an appropriate pace for covering curriculum. In turn, teachers feel accountable for student achievement results. When test results show students do not perform well enough, teachers respond by working in their classrooms and with their grade-level teams to make changes to instruction.

Further, staff feel accountable for the performance of *all* students, not just the students in their classrooms, grades, or groups. Several teachers said, “We do not want any child to fall through the cracks.” This school sees students as students, with varying needs that must be addressed by differentiated instruction every day in every classroom.

Teachers and the principal are committed to the school and to student performance results. Teachers invest their time and energy heavily to meet the goals of the school. Teachers said they come early and stay late, and work with each other on the weekends. They are relentless in

producing effective student performance. The principal called herself “obsessive compulsive” in her efforts to improve the curriculum and instructional program, particularly the reading program. Staff said they would do anything and everything to allow each student to be successful academically.

The culture was intensely collaborative, with multiple teaming structures from grade-level teams to the school leadership team. The collaboration went beyond the formal meetings. Teachers said they interacted all the time, on virtually everything. In the early grades, teachers developed the same lesson plans, taught them simultaneously, used the same end-of-unit tests, reflected together on results, and worked to make the unit more effective for the next year.

Teachers referred to themselves as a family. Many were friends outside of school. This sense of camaraderie included the principal, who was viewed as a reading expert, as “tough” but also supportive and understanding of teachers’ need for autonomy and independence.

Instructional leadership was dense. The principal was seen as a strong instructional leader and a reading expert in the school. Examples of teacher leadership included lead teachers who directed each grade-level team and served on the school’s leadership team, classroom teachers with advanced degrees in reading who are viewed as resources in reading instruction, and the fourth grade math teacher, who serves as the school’s math instructional coach and provides professional development in math to all teachers in the school. Many teachers who received professional development outside the school then relayed their new knowledge to the rest of the faculty.

Finally, Chadwick is highly professional. The reading program reflects research on effective reading from multiple sources like the National Reading Panel, Reading First, and the National Institute of Child Health and Human Development (NICHD). The school, the principal, and most of the teachers were aware of changes coming from the State’s new standards. Before the State adopted its new standards and the county modified the reading and math curricula to include them, Chadwick staff had already begun to change the school’s curricula to reflect the standards. When asked whether the MCCRS represented a brand new way of teaching math and reading, the answer was no; the MCCRS simply reflect good reading and math curricula. The school continues to take the mandated new curriculum and use it as a springboard to build lessons and units adapted to the needs and interests of its unique student body.

SUMMARY

In short, what makes this school work? Why is it so effective in having nearly all students perform to proficiency in reading, math, and science? Critical factors are many, but include the following:

- Smart and capable teachers. Top teacher talent or “teacher talent—cubed” as one teacher put it, is central to Chadwick’s success. The principal spends hours recruiting teachers, interviewing and observing them, developing them after they are hired, and working hard to retain them. The goal is to equip every teacher with the skills needed to tailor the curriculum to the needs and interests of the students in the school. Teachers in this school understand the skills and knowledge goals for each reading and math unit. They can

compare these goals to the MCCRS and the Baltimore County curriculum standards, and then adapt materials and lessons to fit their students. In several different ways, the school works to place the strongest teachers with the kids who need the most help, both for whole class and small group instruction.

- Small class sizes, a factor identified as effective by the principal and most teachers. With a school-wide average class size of 21 students, Chadwick creates an environment where teachers can work with small groups of seven or fewer students in their classrooms. Small class sizes enable core teachers and several push-in teachers to provide the extra help students need to achieve to proficiency levels.
- Strong principal leadership. As many teachers put it, the principal is “tough and understanding.” The principal has high expectations for teacher performance and provides ample support. The principal is strict but gives teachers substantial independence. Teachers have the freedom to make lessons more creative, to link the issues and topics to student interests, and to make learning interesting. This approach works in part because the school’s teachers are highly talented and professional. Furthermore, there is accountability for results, so if an innovation strategy does not work to produce student learning, it is changed.
- The principal holds teachers accountable for both student performance, irrespective of learning challenges, and for keeping pace with the curriculum to ensure that all units are taught to all students each year. Pace and full curriculum coverage are important because students build on each previous year as they move upward through the grade levels.
- Collaborative culture. Collaboration happens at all grade levels, includes all teachers, and occurs all the time. The school has an intensely collaborative culture, with multiple forms of both formal and informal collaboration. This includes incorporating all specialized, extra help teachers into discussions of the core instructional program.
- Commitment to the school and to ALL students. Chadwick teachers are not just concerned with students in their class or grade, but with students across the entire school. This includes commitment to student academic needs, regardless of student background. Teachers view all students as having differing learning styles and needs, all of whom can benefit from differentiated instruction.
- Multiple interventions. Interventions provide extra help for students beginning in prekindergarten, then continuing with extra help push-in strategies in kindergarten through fifth grade classrooms. Interventions are designed to ensure that no student falls behind.
- Accountability for results. For everyone in the school—teachers, administrators, and students—accountability for results is the mantra. Whatever the curriculum, or the “Chadwickified” pedagogy, the test is whether it worked—whether students performed to proficiency. When issues emerged, teachers went back to the drawing board and changed the curriculum and instructional approach to improve results for the next year. The school is relentless in its mission to educate every student to a performance level that is proficient or higher.

ALIGNMENT WITH THE EB MODEL

The strategies of this school are strongly aligned with the school improvement model embedded within the evidence-based funding model (Odden & Picus, 2014). In terms of school improvement, the following strategies of this school parallel those of the EB model:

- Clear school goals focused on student performance in core subjects.
- Strong instructional leadership provided by the principal with additional instructional coaching provided by other teachers.
- Curriculum and instructional strategies driven by student performance data.
- A systemic, school-wide curriculum for the reading and writing programs emphasizing phonics and comprehension, and for the math program emphasizing automaticity of math facts and core mathematics concepts used in multiple problem solving situations.
- Collaborative teacher teams using common lesson plans, curriculum units, formative assessments, and end-of-unit tests.
- Multiple and sophisticated extra help strategies to ensure that students develop reading and math proficiency in the early grades so as to reduce the incidence rates of students with learning problems in later grades.
- Ongoing professional development.
- Collaborative culture.
- Accountability for student achievement results.

Though the specific manifestations of these core school improvement features were unique to this school, the overall strategies are very much in line with the EB model.

Moreover, the overall resources at Chadwick are highly aligned with the EB model, including core class sizes, levels of elective and specials teachers, instructional coaches, special education teachers and aides, other staff to provide extra help not linked to a specific disability, pupil support staff, and pupil-free time to enable grade level teams to collaborate during the regular school day (see Odden & Picus, 2014). The EB model does provide a more robust prekindergarten program and more summer school resources. Overall, though, there is nothing about the strategies and resource levels in Chadwick that would suggest a major modification of the EB funding model.

One final comment about resources is key. This school's focus on recruiting and keeping top teacher talent cannot be overstated as perhaps the most important core resource factor behind its effectiveness. The teachers in this school exemplify a high degree of professionalism and expertise, allowing the school to deploy its sophisticated and complex curriculum and its set of core and extra help strategies. This resource use strategy underscores the importance of how resources are used. Smart and capable teachers equipped with an array of effective instructional strategies can influence student performance more than average or below average teachers.

This school's efforts—to recruit only top teacher talent, to then invest in ongoing training and collaborative work to ensure that these teachers have the full array of needed instructional expertise, and to work to retain these teachers in the school—exemplify an effective use of educational resources. While the school's curriculum and instructional program are certainly

important, it could also be said that the core lesson from this school is that top teacher talent matters and is key to the effectiveness of a school.

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