MONTGOMERY
COUNTY PUBLIC
SCHOOLS

Predicting Grade 6 Marking Period One Performance Using Grade 3 Semester One Indicators

Office of Shared Accountability

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Executive Summary

A major goal of Montgomery County Public Schools (MCPS) is to maintain high academic standards while ensuring all students are college and career ready. To support these efforts, this research report builds upon previous MCPS research on high school on-time graduation and college readiness by expanding the research to the elementary grades. This study originated from an MCPS M-Stat team[1] interested in identifying elementary students who may be at risk for becoming academically ineligible in the middle grades. The study examined the Grade 3 academic, social, and behavioral indicators that are associated with academic performance in Grade 6. To do so, this study drew upon all academic and behavioral indicators currently provided to administrators, teachers, parents, and students by Grade 3 report cards. Report cards are not only a historically standardized process implemented across all MCPS public schools, but they are also a wealth of information collected each quarter that may be used by both school staff and parents to share information and to monitor students.

The following research questions were addressed in this study:

1. What are the Grade 3 academic and behavioral indicators that are significantly related to students' Grade 6 quarter one marking period average (MPA1)?
2. What is the Grade 6 MPA1 that is associated with students failing two or more courses during Grade 9?

Data from two cohorts of students were used for this study. To answer research question one, a cohort of 6,130 students who had Grade 3 academic and behavioral indicators and Grade 6 marking period one performance were used. Ordinary least squares (OLS) regressions were conducted to examine Grade 3 indicators predicting Grade 6 MPA1. Marking period average (MPA) is the average number of grade points earned per course. A second cohort of students who had both Grade 6 MPA1 data and Grade 9 course failure were used to answer research question two. A cross-tabulation was conducted to examine the association between Grade 6 MPA1 and two or more course failure during Grade 9.

Summary of Key Findings

Grade 3 Indicators of Grade 6 Academic Performance

- The regression analysis revealed that of the Grade 3 semester one report card measures, the behavioral indicators of returning completed homework and completing classwork, and the academic indicators of reading comprehension, listening comprehension, writing process, usage/grammar/punctuation/capitalization, mathematics concepts, mathematics application/problem solving, and social studies were the significant predictors of Grade 6 MPA1 performance.

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[1] M-Stat teams in MCPS are groups of administrators, teachers, and instructional specialists that come together to work on a specific issue pertaining to the district.

- Across all 11 of the predictors of Grade 6 MPA1, Grade 3 students returning completed homework without teachers prompting them during the first semester had the largest positive association to Grade 6 MPA1, and Grade 3 first semester absences had the largest negative association.

Middle School Academic Performance and Grade 9 Course Failure

- Descriptive analysis revealed that one third of the students who had an MPA below 3.0 at the end of quarter 1 of Grade 6 failed at least two courses in Grade 9 (see detailed description in the text).

Recommendations

1. Schools should monitor students' academic and behavioral indicators over time as early as Grade 3 and provide the necessary support needed for individual students who might be at academic risk.
2. Develop a monitoring tool so schools can identify students needing academic intervention as early as mid-year of Grade 3 to address academic performance and behavior before students enter Grade 6.
3. Provide training to schools on how to use the tool and how to bring in additional data that they deem appropriate.
4. The MCPS parent and community partnership should be engaged in the conversation of the importance of academic achievement of students in Grade 3 and its relevance to academic performance in middle and high school.
5. OSA should update the model as needed to ensure the prediction accuracy of the model.

Exemplars of Ways Schools Could Use the Tool

Three elementary schools were selected in the school year 2012 to pilot the tool. The following are some ways the pilot schools used the tool:

1. The students identified by the tool as being at risk are the same students that the schools had identified using other means. The tool helped validate the findings and helped to substantiate the work the school has done to identify students needing interventions.
2. The tool helped in monitoring student progress and use of selected intervention.
3. The number of days absent helped identify students who are chronically absent, and allowed follow-up with an attendance secretary as to the reason for students' absence. This also helped narrow parent follow-ups.
4. Use of the tool helped in utilizing in-school resources, focusing them on targeting specific areas that were hindering student progress.

Predicting Grade 6 Marking Period One Performance
Using Grade 3 Indicators

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Background

One milestone of Goal 1 of the Montgomery County Public Schools (MCPS) strategic plan, *Our Call to Action: Pursuit of Excellence*, is that all schools will meet or exceed the state's graduation requirements, and all graduates will be prepared for postsecondary education and employment (MCPS, 2011a). To meet this milestone, one initiative has been the development and implementation of the MCPS Seven Keys to College and Career Readiness (Seven Keys) which measures the attainment of knowledge and skills necessary for college and career readiness (for more information on the Seven Keys see, Von Secker, 2009). The pathway to meeting the Seven Keys starts as early as kindergarten and continues through Grade 12. It is MCPS' belief that by monitoring students along this pathway to college and career readiness, one can narrow the racial/ethnic gap and ensure that all students are college and career ready when they leave MCPS.

In order to monitor individual students' academic success and identify individual students who might be at academic risk of dropping out or not meeting the college and career readiness pathways, the Office of Shared Accountability (OSA) has developed predictive models and tools to help schools monitor indicators that influence students' academic success and identify students who might be academically at risk. Most of these models are at the middle (Schatz & Gheen, 2007; West, Wang, & Rethinam, in press) and high school levels (Rethinam & Von Secker, 2011; Rethinam, 2011). MCPS currently does not have any elementary level predictive models. A similar pattern exists nationally with the majority of prior research examining middle and high school factors in predicting dropout, graduation, and college readiness (Rumberger & Arellano, 2007; ACT 2008; MacIver, Balfanz, Byrnes, 2009) but not extending the focus to indicators in the elementary grades. There are a handful of studies that have examined the relationship between elementary school student factors, especially Grade 3, and high school graduation (Lesnick, Goerge, Smithgall, & Gwynne, 2010; Hernandez, 2011), but these studies focused solely on third grade reading competency and do not include third grade attendance, behavior, or course passing patterns in the analyses.

So far in MCPS we have looked at how eighth grade factors have influenced ninth grade credit attainment, and how ninth grade factors have influenced on-time high school graduation and college readiness. However, MCPS does not currently have any indicator research that examines elementary grade students and their later academic success. Therefore, the first purpose of this study was to identify indicators as early as Grade 3 that predict Grade 6 first marking period course performance (as measured by students' marking period averages). Marking period average (MPA) was used as the outcome because prior studies in MCPS have indicated that students' Grade 9 grade point average (GPA) was the strongest predictor of high school graduation and most highly associated with three of the seven keys to college readiness (Rethinam, 2011). Additionally, national studies also have shown that high school GPA is

consistently the best predictor of college performance and college graduation (ACT, 2008; Geiser & Santelices, 2007; Roderick, Nagaoka, & Allensworth, 2006).

The second purpose of this study was to determine what Grade 6 marking period one average (MPA1) was associated with students failing two or more courses in Grade 9. This in turn would connect the current study to Grade 9 course failure, which in turn extends this study and the model developed to the research on high school graduation and college readiness (Rethinam, 2011).

Literature Review

National Studies

Nationally, research aimed at developing indictors of student failure in school have generally focused on the problems of students dropping out and not graduating on time (i.e., within four years) from high school (Allensworth & Easton, 2005; Allensworth & Easton, 2007; Rumberger & Arellano, 2007; MacIver, et al., 2009). To study these two problems, researchers have adopted a method referred to as the "ABCs," which stands for attendance, behavior (e.g., in- and out-of-school suspensions), and course passing. By using this approach to study high school dropouts and on-time graduates, research at the high school level has indicated that students' GPA, number of semester course failures, and days absent during Grade 9 are the strongest predictors of students dropping out and/or not graduating on time from high school (Allensworth & Easton, 2007). Additionally, students who were identified as "on track" (i.e., passed the required number of courses) at the end of Grade 9 were nearly four times more likely to graduate from high school than their peers who were not on track (Allensworth & Easton, 2005).

In regards to the middle grades, there are a few studies that have applied the ABCs approach to examine the academic indicators in middle grades associated with high school outcomes (ACT, 2008; Kurlaender, Reardon, & Jackson, 2008; MacIver, et al., 2009). One such study, Kurlaender et al. (2008), found that, after controlling for English language competency, special education status, low socioeconomic status, and race/ethnicity, Grade 7 GPA was a consistently significant predictor of high school completion. The study concluded that students with a higher GPA as early as Grade 7 were more likely to graduate relative to their lower achieving counterparts. Another study, MacIver et al. (2009), examined students as early as Grade 6. The study found that more than half of Denver Grade 6 students had at least one risk factor (failing math, failing reading/language arts, absent more than 20 days, or had at least one suspension) for dropping out of high school.

Moving to the elementary grades, there have been a small number of studies that have focused on students in elementary school and their outcomes later in high school. The studies that have been conducted have examined the relationship between third grade reading proficiency and high school outcomes (Lesnick, et al., 2010; Hernandez, 2011). The Lesnick et al. (2010) study of third grade reading levels found a significant association between third and eighth grade reading levels and ninth grade course performance after controlling for demographic and school characteristics. While these studies are important, they did not employ the ABCs approach. So while they observed an association between reading ability and later schooling outcomes, we do

not know how other indicators such as attendance, behavior, and course passing mediate or interact with reading ability. This shortcoming makes it difficult to connect the findings with the research on middle and high school students and limits our ability to have a national approach to monitoring students at risk of dropping out or not graduating on time from high school that covers the entire elementary to high school pipeline.

Prior Studies Conducted in MCPS

Based on the above national literature and requests from MCPS stakeholder groups, MCPS researchers have used the ABCs approach to study Grades 8 and 9 students to identify who might be at academic risk. One such study examined the indicators by the end of semester 1 of Grade 8 and their influence on students' credit attainment in core courses by end of Grade 9 (Rethinam & Von Secker, 2011). The study findings indicated that middle school academic engagement indicators such as Grade 8 semester one marking period averages (MPA), Grade 7 attendance rate, and academic ineligibility (i.e., an MPA below 2.00 or one or more course failures) in two marking periods during the first semester of Grade 8 were predictors of credit attainment in core courses by end of Grade 9. It concluded that once we identify students at risk of not earning credits in core courses early on, middle schools can then target resources to provide the necessary support and intervention to help these students before they enter Grade 9.

Another MCPS study examined Grade 9 indicators and their influence on students graduating on time from high school and being ready for college (Rethinam, 2011). The study found that the end-of-year Grade 9 GPA was the strongest predictor of graduating high school in four years. Also, of the Grade 9 indicators influencing college readiness, Grade 9 GPA was the strongest predictor of attaining a C or higher in Algebra 2 by Grade 11, attaining a 3 or higher on any Advanced Placement exam or a 4 or higher on any International Baccalaureate exam, and attaining an SAT score of 1650 or higher or an ACT score of 24 or higher (Seven Keys).

Despite national and MCPS efforts, there currently is a dearth of research on elementary school student indicators and later school outcomes. To address the need for research that connects the elementary grades to the research on completing high school and college readiness, this study serves two purposes: 1) to add to the current literature on early warning indicators, and 2) to provide the school district with indicators as early as semester 1 of Grade 3 so schools can monitor students' progress and provide the necessary intervention. Moreover, because this study was requested by the Ineligibility M-Stat team (M-Stat teams in MCPS are groups that come together to work on a specific issue pertaining to the district), which consists of administrators, teachers, and instructional specialists, it demonstrates how MCPS researchers can aide MCPS stakeholders by helping to analyze relevant data, produce monitoring tools, identify best practices, and be involved in the decision-making progress.

Research Questions

1. What are the Grade 3 academic and behavioral indicators that are significantly related to students' Grade 6 quarter one marking period average (MPA1)?
2. What is the Grade 6 MPA1 that is associated with students failing two or more courses during Grade 9?

Methods

Study Population

This study is based on two different cohorts of MCPS students. To answer question one, administrative and non-standards-based report card data were used because most elementary schools use a non-standards-based report card. The data were used for all MCPS students who were enrolled in Grade 3 during the 2007–2008 school year and were enrolled in Grade 6 three years later (2010–2011). Students who met the three criteria resulted in a population of 6,130 Grade 3 students. For schools (approximately 20 elementary schools) that use standards-based report cards, a separate model was developed, and the findings are reported in Table B1 (Appendix B).

For question two, administrative and report card data were examined. A second cohort of MCPS students enrolled in Grade 6 during the 2006–2007 school year and who were enrolled in Grade 9 three years later (2009–2010) were selected. This resulted in a second study population of 9,012 Grade 6 students.

Measures

The variables used for this study were selected based on both prior research and what was available on the Grade 3 student report cards. Additionally, prior to finalizing the model, the variables also were vetted with the stakeholder group (Ineligibility M-stat team and a number of elementary school principals). The variables are listed in Table A1 (Appendix A). Detailed descriptions of some of the measures are presented below.

Outcome Measure

Grade 6 Marking Period One Average. In MCPS, grade points are the numeric equivalent of a student's grade in a credit-bearing course, and the values are 4 points for an A, 3 for a B, 2 for a C, 1 for a D, and 0 for an E. The MPA is computed by dividing the total number of grade points earned during the marking period by the total number of courses taken during the marking period.

Predictors

Absences. In MCPS, each teacher is responsible for recording the attendance of students in their class. After teachers record attendance, it is gathered by each school's attendance secretary and entered into MCPS's web-based attendance system. For reporting purposes, MCPS defines an absence in accordance with the definition of "Days Absent" in the Maryland Student Records Manual. A student is counted as present for a full day if the student is in attendance four hours or more of the school day. The absence of students is reported to parents on each report card (MCPS, 2010).

Suspensions. In MCPS, there are two types of suspensions: in-school and out-of-school suspensions. MCPS defines an in-school suspension as when a student is removed from class for a specified period of time and provided appropriate school work under staff supervision. An out-

of-school suspension is defined as the act of excluding a student from school for a defined period of time for disciplinary reasons with notice to the parent/legal guardian. Because both types of suspensions are rare for MCPS elementary students, we combine the two types into one measure (MCPS, 2011b).

Subject Grades (Reading Comprehension, Listening Comprehension, Writing Process, Usage/Grammar/Punctuation/Capitalization, and Social Studies). The majority of Grade 3 students in MCPS receive four report cards (one for each marking period). One of the components reported on the report card are the students' subject grades. The grades are based on averages of students' work during the report period. MCPS uses letter grades (A = outstanding level of performance, B = high level of performance, C = acceptable level of performance, D = minimal level of performance, E = unacceptable level of performance) to indicate achievement in academic subjects.

Mathematics Grades (Mathematics Concepts and Mathematics Application/Problem Solving). For each of marking period, MCPS Grade 3 students receive detailed indicators of mathematics performance in addition to their overall mathematics subject grade. MCPS uses the letters O (outstanding level of performance), S (satisfactory level of performance), and N (the level of performance needs to be improved) to indicate achievement in each mathematics component.

Learning Skills (Returns Completed Homework and Completes Classwork). In addition to academic subject grades, MCPS Grade 3 students are evaluated on a series of learning skills. These are a series of nonacademic indicators that are related to student achievement. MCPS uses four letters I (independently), L (with limited prompting), F (with frequent prompting), and R (rarely) to report information about the learning skills.

Statistical Procedures

As was done in other published indicator work (Allensworth & Easton, 2005, 2007; Zau & Betts, 2008; Hernandez, 2011), this study used a combination of descriptive and predictive statistical techniques. First, an ordinary least squares (OLS) linear regression analysis was conducted to understand the relationship between students' Grade 6 MPA1 and Grade 3 semester one academic and behavioral indicators (i.e., attendance, suspensions, subject grades, and learning skills). The results of the final OLS regression model are reported in both unstandardized and standardized regression coefficients. To focus MCPS efforts and to simplify interpretation, the final model included only those indicators that were significantly related to the outcome. Therefore, the table in the following section only shows the significant predictors.

Secondly, a cross-tabulation was conducted to examine the association between Grade 6 marking period average levels (e.g., 3.0 and above) and two or more course failures in Grade 9.

Results and Discussion

In the following section, the findings are organized by research questions.

Research Question 1. What are the Grade 3 academic and behavioral indicators that are significantly related to students' Grade 6 MPA1?

Table 1. Grade 3 Semester 1 Predictors of Grade 6 Marking Period 1 Average

Predictor	Unstandardized Regression Coefficient	Standardized Regression Coefficient
Number of absences	-0.013	-0.071
Number of suspensions	-0.760	-0.020
Returns completed homework[1]	0.175	0.182
Completes classwork[1]	0.053	0.055
Reading comprehension[2]	0.116	0.134
Listening comprehension[2]	0.035	0.037
Writing process[2]	0.059	0.069
Usage/grammar/punctuation/capitalization[2]	0.095	0.116
Mathematics concepts[3]	0.095	0.081
Mathematics application/problem solving[3]	0.140	0.127
Social Studies[2]	0.093	0.087

Notes. Final Model: n = 6,130, R^2 = 0.480. All predictors were statistically significant at $p < 0.05$.
[1]Learning skill ranges from 'Rarely' = 0 to 'Independently' = 3.
[2]Subject grade ranges from 'E' = 0 to 'A' = 4.
[3]Mathematics grade ranges from 'Needs to be improved' = 0 to 'Outstanding' = 2.

Grade 3 indicators that were found to significantly contribute to Grade 6 MPA1 are shown in Table 1 above. The unstandardized regression coefficient values represent how a one unit change in the predictor would impact students' Grade 6 MPA1. By inserting actual values for each predictor and multiplying its associated coefficient, it is possible to predict the actual Grade 6 MPA1 for all MCPS Grade 3 students. For example, for each day a student is absent, a student's Grade 6 MPA1 is predicted to decrease by 0.013 points. So if a student missed 10 days of school during Grade 3 semester 1, the model suggests that the students Grade 6 MPA1 would be reduced by 0.13 points.

The standardized regression coefficient values (β) measure the strength of each predictor variable in comparison to the other variables in the model. The higher the absolute value, the stronger the relationship is between the predictor and the outcome (Grade 6 MPA1) in relationship to the other predictors. The R^2 indicates the proportion of variance in Grade 6 MPA1 explained by all of the predictors together. The standardized regression coefficients in Table 1 shows that students returning completed homework was the strongest predictor (β = 0.182) of Grade 6 MPA1, followed by reading comprehension (β = 0.134), mathematics application/problem solving (β = 0.127), usage/grammar/punctuation/capitalization (β = 0.116), social studies (β = 0.087), mathematics concepts (β = 0.081), number of absences (β = -0.071), writing process

(β = 0.069), completes classwork (β = 0.055), listening comprehension (β = 0.037), and number of suspensions (β = -0.020). Number of absences and suspensions were the only predictors that had a negative relationship to students' Grade 6 MPA1.

Research Question 2. What is the Grade 6 MPA1 that is associated with students failing two or more courses during Grade 9?

MCPS research has shown that students who fail two or more courses in Grade 9 are less likely to graduate on time from high school than Grade 9 students who fail fewer than two courses (Rethinam, 2011). In order for the school staff to target these students early on, a cross-tabulation was conducted to examine the relationship between Grade 6 marking period averages and failing two or more courses in Grade 9. The results indicate that of the students who earned an MPA of 3.0 or above by the end of quarter one Grade 6, only 4.0% failed two or more courses during Grade 9 (Figure 1). Whereas, among students who earned an MPA below 3.0 by the end of quarter one Grade 6 (i.e., students who earned 2.50–2.99, 2.49–2.01, and 2.00 or below), a third of them failed two or more courses during Grade 9.
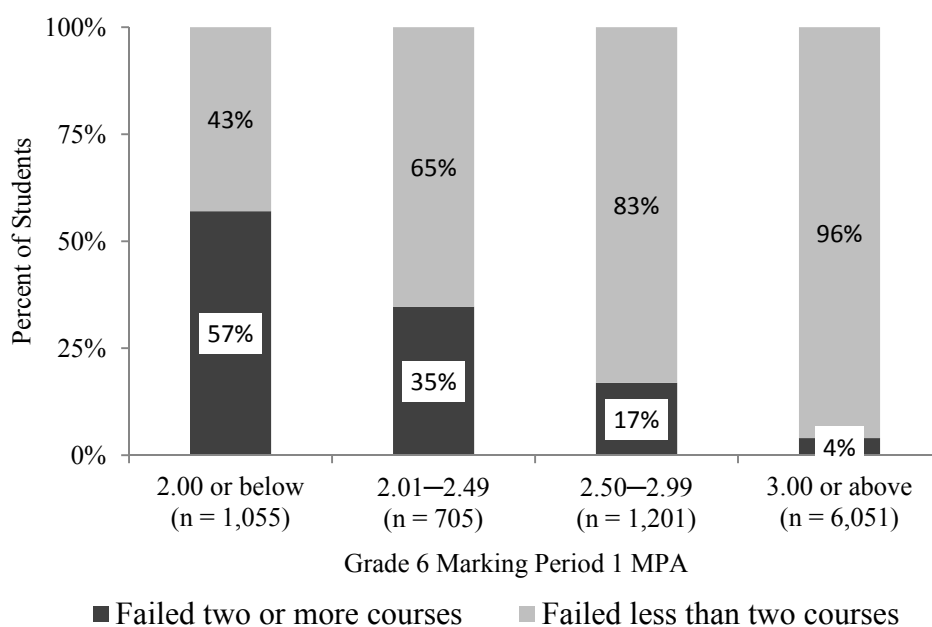

Figure 1. Percentage of students who failed two or more courses in grade 9 by grade 6 MPA1 (n = 9,012).

In MCPS, a student can maintain a marking period average of 2.0 or better and fail no more than one course per marking period to be eligible for extracurricular activities. However, as shown in Figure 1 above, among students who earned an MPA below 2.0 by the end of Grade 6 quarter 1, more than half failed two or more courses during Grade 9. Grade 9 course failure has been consistently reported as having an influence on graduating from high school on time (Allensworth & Easton, 2007; Rumberger & Arellano, 2007; MacIver, et al., 2009). One of the three most common reasons that students give for dropping out is failing courses

(Catterall, 1998). Students who fail their classes are likely to begin questioning their ability to meet graduation requirements, lose interest or disengage in school, and eventually drop out of high school (Wagner, 1989). Therefore, it is important that schools monitor students' MPA (which is an indicator of students' engagement) over time as early as Grade 3 for more than just ineligibility purposes and provide the necessary support needed for individual students who might be at academic risk.

Conclusion and Recommendations

The current study examined Grade 3 students' academic and behavioral indicators and their influence on students' Grade 6 first quarter marking period average. Further, the study examined the relationship between Grade 6 students' marking period average and their Grade 9 course failure in order to create an early warning system that spans the elementary, middle, and high school grades. It is clear from the findings of this study, and past research, that students' marking period averages are an important indicator of future academic success. By monitoring students' grades, schools can identify the areas where individual students are struggling academically, behaviorally, and socially, and intervene early on in the child's academic career.

Based on the findings of this study and the process that was undertaken to construct a model that was both informed and driven by feedback from various MCPS stakeholders, this research can be extended to implementing an elementary monitoring tool across all MCPS elementary schools. Like the currently implemented middle school monitoring tools, this would require OSA researchers to share, train, and inform administrators, teachers, and parents about the importance of sustaining a high level of academic performance in the elementary grades and how data may be used to identify and shape student behaviors conducive to doing well in school as early as Grade 3.

As currently done with the middle school monitoring tools, this would be accomplished through training sessions offered by OSA to MCPS elementary school administrators and teachers that would instruct them on how to use the new tool and how to bring in additional data as they deem appropriate (see Appendix Table A2 for an example of the data that would be included in the tool). Based on this tool, each Grade 3 student could be examined and monitored, and their progress could then be tracked as they move from Grades 3 to 4, 4 to 5, and 5 to 6. Not only would this process support elementary school administrators and teachers, but it would also help Grade 6 administrators and teachers understand more about the needs of their incoming students each school year.

The MCPS parent and community partnership should be engaged in the conversation of the importance of academic achievement of students in Grade 3 and its relevance to middle and high school achievement.

Limitations

This study is based on a single cohort of students and cannot be generalized beyond MCPS Grade 3 students who had data in Grade 6 three years later. The results from the regression model explained less than half of the variability in students' Grade 6 marking period one

performance. There may be other indicators (personal, academic, or social) that might influence a student's Grade 6 MPA. Therefore, the results of this study should be interpreted along with observations of and interactions with the student during the school year.

Recommendations

1. Schools should monitor students' academic and behavioral indicators over time as early as Grade 3 and provide the necessary support needed for individual students who might be at academic risk.

2. Develop a monitoring tool so schools can identify students needing academic intervention as early as mid-year of Grade 3 to address academic performance and behavior before students enter Grade 6.

3. Provide training to schools on how to use the tool and how to bring in additional data that they deem appropriate.

4. The MCPS parent and community partnership should be engaged in the conversation of the importance of academic achievement of students in Grade 3 and its relevance to academic performance in middle and high school.

5. OSA should update the model as needed to ensure the prediction accuracy of the model.

Exemplars of Ways Schools Could Use the Tool

Three elementary schools were selected in the school year 2012 to pilot the tool. The following are the some ways the pilot schools used the tool:

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2. The tool helped in monitoring student progress and use of selected intervention.

3. The number of days absent helped identify students who are chronically absent, and allowed follow-up with an attendance secretary as to the reason for students' absence. This also helped narrow parent follow-ups.

4. Use of the tool helped in utilizing in-house resources, focusing them on targeting specific areas that were hindering student progress.

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References

ACT. (2008). *The forgotten middle*: *Ensuring that all students are on target for college and career readiness before high school*. Iowa City: IA. Author.

Allensworth, E. M., & Easton, J. Q. (2005). *The on-time indicator as a predictor of high school graduation*. Chicago: Consortium on Chicago School Research.

Allensworth, E. M., & Easton, J. Q. (2007). *What matters for staying on-track and graduating in Chicago Public Highs Schools: A close look at course grades, failures, and attendance in the freshman year*. Chicago: Consortium on Chicago School Research.

Catterall, J. S. (1998). Risk and resiliency in student transition to high school. *American Journal of Education, 106,* 302–333.

Geiser, S., & Santelices, M. V. (2007). *Validity of high school grades in predicting student success beyond the freshman year: High school record vs. standardized tests as indicators of four-year college outcomes*. Center for Studies in Higher Education Research and Occasional Paper Series. Berkeley, CA: University of California.

Hernandez, D. J. (2011). *Double jeopardy: How third-grade reading skills and poverty influence high school graduation*. The Annie E. Casey Foundation.

Kurlaender, M., Reardon, S., & Jackson, J. (2008). *Middle school predictors of high school achievement in three California school districts*. A Report released by the California Dropout Research Project. Retrieved on July 27, 2010, at http://cdrp.ucsb.edu/dropouts/pubs_reports.htm.

Lesnick, J., Goerge, R. M., Smithgall, C., & Gwynne, J. (2010). *Reading on grade level in third grade: How is it related to high school performance and college enrollment?* Chicago: Chapin Hall at the University of Chicago.

MacIver, M. A., Balfanz, R., & Byrnes, V. (2009). *Dropouts in the Denver Public Schools: Early warning signals and possibilities for prevention and recovery*. Baltimore, MD: Johns Hopkins University.

Montgomery County Public Schools. (2010). *Regulation JEA-RA: Student Attendance*. Rockville, MD: Author.

Montgomery County Public Schools. (2011a). *Our Call to Action: Pursuit of Excellence 2011–2016*. Rockville, MD: Author.

Montgomery County Public Schools. (2011b). *Regulation JGA-EB: Suspension and Expulsion*. Rockville, MD: Author.

Rethinam, V. (2011). *Grade 9 indicators influencing high school graduation and college readiness in Montgomery County Public High Schools*. Rockville, MD: Montgomery County Public Schools.

Rethinam, V. & Von Secker, C. (2011). *Grade 8 first semester indicators that predict core course completion during grade 9*. Rockville, MD: Montgomery County Public Schools.

Roderick, M., Nagaoka, J., & Allensworth, E. (2006). *From high school to the future: A first look at Chicago Public School graduates' college enrollment, college preparation, and graduation from four-year colleges*. Chicago: Consortium on Chicago School Research at the University of Chicago.

Rumberger, R. W., & Arellano, B. (2007). *Students and school predictors of high school graduation in California*. A Report released by the California Dropout Research Project.

Schatz, C. J., & Gheen, M. H. (2007). *Using lagging indicators to predict grade 6 performance on the MSA Mathematics*. Rockville, MD: Montgomery County Public Schools.

Von Secker, C. (2009). *Closing the gap: Seven keys to college readiness for students of all races/ethnicities*. Rockville, MD: Montgomery County Public Schools.

Wagner, M. (1989). *The transition experience of youth with disabilities: A report from the national longitudinal study*. Paper presented at the Council for Exceptional Children, San Francisco, CA.

West, T. C., Wang, H., & Rethinam, V. (in press). *Predicting grade 6 student's performance on the Maryland School Assessment in Reading*. Rockville, MD: Montgomery County Public Schools.

Zau, A.C., & Betts, J.R. (2008). *Predicting success; preventing failure: An investigation of the California high school exit exam*. Public Policy Institute of California.

Appendix A

Table A1. Variables and Descriptions

Variables for Research Q1	Variable Description
Dependent Variables	
Grade 6 marking period 1 performance (MPA1)	A continuous variable produced by the school district. Just like a high school grade point average (GPA), the MPA is a middle school average of students' achievement in academic subjects based on a 4 point scale. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Independent Variables	
Absences	A continuous variable indicating the number of school days a student missed across the marking periods 1 and 2 of Grade 3.
Suspensions	A continuous variable indicating the number of times a student was suspended in and/or out of school across marking periods 1 and 2 of Grade 3.
Returns completed homework	A continuous variable ranging from 0 to 3 based on students' average learning skill mark across marking periods 1 and 2 of Grade 3. 0 = rarely; 1 = with frequent prompting; 2 = with limited prompting; 3 = independently.
Completes classwork	A continuous variable ranging from 0 to 3 based on students' average learning skill mark across marking periods 1 and 2 of Grade 3. 0 = rarely; 1 = with frequent prompting; 2 = with limited prompting; 3 = independently.
Reading comprehension	A continuous variable ranging from 0 to 4 based on students' average subject grade across marking periods 1 and 2 of Grade 3. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Listening comprehension	A continuous variable ranging from 0 to 4 based on students' average subject grade across marking periods 1 and 2 of Grade 3. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Writing process	A continuous variable ranging from 0 to 4 based on students' average subject grade across marking periods 1 and 2 of Grade 3. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Usage/Grammar/Punctuation/Capitalization	A continuous variable ranging from 0 to 4 based on students' average subject grade across marking periods 1 and 2 of Grade 3. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Mathematics concepts	A continuous variable ranging from 0 to 2 based on students' average performance across marking periods 1 and 2 of Grade 3. 0 = the level of performance needs to be improved; 1 = satisfactory level of performance; 2 = outstanding level of performance.
Mathematics application/problem solving	A continuous variable ranging from 0 to 2 based on students' average performance across marking periods 1 and 2 of Grade 3. 0 = the level of performance needs to be improved; 1 = satisfactory level of performance; 2 = outstanding level of performance.
Social studies	A continuous variable ranging from 0 to 4 based on students' average subject grade across marking periods 1 and 2 of Grade 3. 0 = E; 1 = D; 2 = C; 3 = B; 4 = A.
Variables for Research Q2	Variable Description
Grade 9 course failure	Number of courses failed by the end of Grade 9.

Table A2. A Mock Monitoring Tool of Grade 3 Semester 1 Indicators of Grade 6 Marking Period One Predicted Performance

Grade 3 Student	Predicted Grade 6 Marking Period 1 Below 3.0	Grade 3 Semester 1 Performance										
		Attendance	Behavior			ELA and Social Studies Performance (Ranges from 0 to 4)					Mathematics Performance (Ranges from 0 to 2)	
		Number of Absences	Number of Suspensions	Returns Completed Homework (0 to 3)	Completes Classwork (0 to 3)	Reading Comprehension	Listening Comprehension	Writing Process	Usage/ Grammar/ Punctionation/ Capitalization	Social Studies	Mathematics Concepts	Mathematics Application/Problem Solving
Student 1	No	1	0	3	2.5	4	3	3	4	4	2	2
Student 2	No	0	0	3	2.5	3	2.5	2	2	3	1.5	1
Student 3	**Yes**	**1**	**0**	**3**	**3**	**2**	**1**	**2.5**	**1**	**2.5**	**1**	**1**
Student 4	**Yes**	**11**	**0**	**3**	**1.5**	**1.5**	**2**	**1.5**	**2**	**3**	**0.5**	**0**
Student 5	No	16	0	2.5	2.5	3	3	3	3	4	1.5	1
Student 6	**Yes**	**2**	**0**	**3**	**3**	**2**	**2**	**2**	**2**	**2.5**	**0.5**	**0**
Student 7	**Yes**	**1**	**1**	**1**	**1.5**	**4**	**4**	**2.5**	**3**	**3**	**1**	**1**
Student 8	**Yes**	**3**	**0**	**1**	**1.5**	**2.5**	**2**	**2**	**3**	**2.5**	**2**	**2**

Appendix B

Table B1. Grade 3 Semester 1 Predictors of Grade 6 Marking Period 1 Average:
Final Model Standardized Report Card

Predictor	Unstandardized Regression Coefficient	Standardized Regression Coefficient
Number of suspensions	-0.750	-0.091
Task completion[1]	0.178	0.202
Reading[2]	0.170	0.159
Writing[2]	0.077	0.082
Mathematics[2]	0.244	0.244

Note. n = 1,031, R^2 = 0.351.
[1]Learning skill ranges from 'Rarely' = 0 to 'Independently' = 3.
[2]Subject grade average ranges from 'E' = 0 to 'A' = 4.