MEMORANDUM

To: Members of the Board of Education
From: Joshua P. Starr, Superintendent of Schools
Subject: Early Warning Indicators

The purpose of this memorandum is to provide the Board of Education with a summary of Montgomery County Public Schools (MCPS) efforts toward developing a systemwide early warning monitoring tool to support all students and ensure their academic success by identifying factors that may impede their academic progress. The tool—Early Warning Indicators (EWI)—allows school and central services staff members to identify students who may need interventions and enable us to mobilize the necessary supports. MCPS will use the tool to inform resource allocation, staff actions, and accountability. This tool will provide critical information allowing the school system to provide the differentiated supports that will ensure equity.

Background

In fall 2012, I requested that the Office of Shared Accountability (OSA) analyze cohort data to determine what common patterns may be evidenced in students who have positive academic outcomes versus those who do not; specifically, what are differences between students who graduate and students who drop out. The intent of this research was to study the characteristics of students and isolate common behaviors as soon as they begin to emerge, so that we can determine which schools may need additional support and whether there are patterns across our community. These student behaviors may be thought of as EWI’s (Balfanz & Byrnes, 2010), as they occur in advance of students dropping out. As such, OSA attempted to address the following research questions:

1. What are the attendance, behavior, and coursework patterns at the end of marking period three for Grade 1 students and at the end of marking period one for Grades 3, 6, and 9 students who eventually drop out of high school?
2. For each of the time points, what is the likelihood of students dropping out by each EWI?
3. Are the EWI’s for identifying the MCPS Class of 2011 dropouts reliable at identifying the Class of 2012 dropouts?

After analyzing the academic history for all 11,241 students in the Class of 2011 and then validating this work by analyzing the subsequent Class of 2012 (11,306), researchers were able to isolate outcome predictors as early as Grade 1. By placing emphasis on attendance, behavior, and
coursework, and the cumulative effect these variables have on student learning, we now may quantify with a high degree of accuracy the level of support our students need. In March 2013, OSA published these findings in the report, *Just the Right Mix: Identifying Potential Dropouts in Montgomery County Public Schools Using an Early Warning Indicators Approach*.¹

**From Research to Action**

Following the release of the study, I charged OSA with designing a system with comprehensive Kindergarten through Grade 12 predictive analytics. During the course of the 2013–2014 school year, models for monitoring were developed and tested, and pilot schools and cross-sections of stakeholders provided feedback. This undertaking resulted in a tool that may calculate for each student the degree of support he or she needs through the weighting of critical success factors. In addition to attendance, behavior, and coursework, a fourth factor of mobility was observed to have a strong correlation to student outcomes and thus added to the model to strengthen its accuracy. The results yielded a tool that may diagnose in real time whether a student is making sufficient progress toward on-time graduation. Once the logic models were finalized, the next undertaking was to design a web interface that would automate this process and make the information available to all adults responsible for the learning of our students.

**Online Tool**

A collaborative team in the offices of the chief technology officer (OCTO) and OSA worked to develop the online tool. The team was tasked with finalizing the calculations and designing the web interface that will be available to school and central services staff members. The resulting tool provides multiple reports delineating students in high, moderate, and low support categories. The data display allows for disaggregation on both the system and school levels. Additionally, a display will show the various data points used in the calculations to determine the level of support designation for each student.

**Use of Data in MCPS**

The Montgomery County Board of Education core values encourage the use of data to inform instructional practices. Our core values of equity, learning and relationship drove the work of developing this tool. The core value of learning states that we must “… analyze and reflect upon evidence to improve our practices.” The core value of relationships indicates “… we will get to know student and staff members as individuals to better serve them …” The core value of equity requires that resources are distributed according to need. The EWI tool is critical to identifying need and is therefore an essential component in helping us ensure that we are focused on closing the achievement gap. The EWI tool allows us to use data to truly know students, ask appropriate questions, and then make informed decisions to improve our practices and services for children.

The EWI tool represents advancement in the data displays available to staff members. The tool places multiple data points in one place, but also it provides information about the relationship of those data points. The models use these data relationships to suggest levels of support for each student. This holistic student data may be used to prioritize programs and supports.
As the EWI tool allows for multiple data points to be displayed in a manageable way, school teams will work more efficiently. For example, a common middle school practice is to discuss student information at the grade-level team meeting, where teachers share concerns (behavior, academics, etc.). It is expected that the tool will enhance this practice by enabling teams to prioritize student assistance based on the identified level of support. Once a student is identified as needing supports, the team will then drill down to ask “why” questions and ultimately align practices/interventions/supports to meet the specific needs of students. Furthermore, schools may identify a hierarchy of interventions and/or supports for students at all identified levels.

The data provide insight that will inform multiple areas within schools to support the needs of students. For example, EWI information will be used by coordinated student support teams to design specific interventions for students; inform student learning outcomes for teachers; and identify students who may benefit from outside partnership activities such as mentoring programs, etc.

Joint data review meetings, scheduled with staff members from both offices of school support and improvement and the chief academic officer, are a concrete example of how data will inform central services priorities. The regular meetings will focus on examining prioritized data points and the implications for central services actions. EWI data will be one of the data points reviewed in the meetings and will provide meaningful insight into the support needs across the district.

**Feedback from Practitioners to Improve the Tool**

Extensive feedback will be collected on the EWI tool available during the 2014–2015 school year. The feedback will be used to improve future versions of the tool to better meet the needs of all users. Central services staff members will collect anecdotal information throughout the year during conversations with school staff members. Additionally, we will use structured feedback mechanisms—taking advantage of existing meetings and gatherings of stakeholders as much as possible—to collect suggestions and recommendations. We also will convene focus groups to gather more detailed feedback.

**Connections to County Services**

EWI data will provide the opportunity to identify schools or regions with higher percentages of students needing support. MCPS will use the information to adjust practices to serve our students better. The tool also will provide a vehicle to initiate conversations with Montgomery County agencies about aligning multiple levels of service. By using data to identify the locations needing higher levels of support, a dialogue may be established for the purposes of aligning school and county services to ensure the needs are met for the children of Montgomery County.

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