

Building Blocks #3, #4 and #7: Building a curriculum and instructional system that will get Maryland students to world-class standards for college and career readiness.

GAP ANALYSIS

A System that Prepares Students for College and Careers

The top-performing countries typically use statewide or nation-wide tests no more than three times in a student's career in high school. These tests are given at the entrance to high school, if entrance to high school is competitive, at the end of what in the United States would be the sophomore year in high school, and at the end of high school. The reason a test is given at the end of 10th grade is that this marks the end of the common curriculum, the curriculum that all students are expected to master in order to enter rigorous pathways matched to their academic and career interests. For their final two years in high school, students go either into a program intended to prepare them for university or for a career, with work beginning right after high school or after more career and technical education at the postsecondary level. Increasingly, in many countries, students who are in a career and technical program in secondary school go on to postsecondary education after high school, and students who are in the academic stream in high school are getting vocational qualifications as well as academic credentials after high school.

More generally, average academic achievement of students in the top performing countries overall enables them to leave high school with the equivalent of two to three years more education than the typical American high school graduate. This means, for example, that what the American student is studying in the first two years of all but highly selective colleges and universities is being studied by his or her counterpart in a top performing country in high school.

High performing countries focus on "qualifications" not diplomas. Literally, a qualification is a certification that says that the student has taken specific courses and has gotten specified grades in them. In these countries, it is very clear what courses a student has to take, the content of these courses and the grades he or she has to have achieved to pursue further study or begin a career.

Such a system only works because the top systems not only say what subjects a student must study, but also describe the trajectory of topics that must be studied in that subject as a student goes through school, create course syllabi set to that trajectory or framework and create and score examinations set to the course designs. Thus all employers and universities know just what it means to have gotten a particular grade in a particular course. They know the content of the course and they know that, because the exams are centrally scored by one exam authority, they can trust the grade. Ultimately, this is exactly what a high school diploma

should signal to employers and colleges and universities in Maryland and across the United States.

With such a system in place, parents can hold the schools accountable for student success on state end-of-course exams. Students work hard in school because they can easily see that doing well in school is very important to their future whether they want to fabricate the blades for high speed, high temperature turbines or argue cases in court. No state in the United States has built a real system that encompasses all of these attributes.

Career and Technical Education

Unfortunately, career and technical education in the United States is widely regarded as what a student does if he or she cannot do academics. In the top performing countries, however, a student is expected to have achieved high competence in academics whether that student is headed to university or vocational training. There are examples of high schools in the United States that follow an academically rigorous career and technical education model, including Western Tech and Sollers Point high schools in Baltimore County. But no state has, as yet, provided such opportunities on a statewide basis, although efforts are underway in California, Massachusetts, and Delaware, to do so.

Two initiatives offer opportunities for Maryland to evaluate and build on its existing CTE program. Pathways to Prosperity is an initiative by Jobs for the Future (JFF), in collaboration with the Harvard Graduate School of Education (HGSE) and state partners, to increase the number of students who complete high school and earn a postsecondary credential with labor market value. Created in 2012, states and regions in the Pathways network design academic and career pathways in grades 9-14 focused on high-growth, high-demand sectors of the economy such as information technology, health care, and advanced manufacturing. The network allows states to build their capacity to design, implement, and scale state and regional pathways. This network can provide Maryland with the tools needed to develop and deliver high-quality CTE programming. There are currently nine state members: AZ, CA, DE, GA, IL, MA, MO, NY, and TN.

ConnectEd began in 2006 in nine districts in California with high numbers of disadvantaged students and below-average student achievement. It has since expanded its services beyond California and is working with more than 30 districts in CA, IL, MI, NY, OH, TX, and WI. ConnectEd helps leaders and educators envision and chart a course of action for building a system of college and career pathways, drawing on lessons and insights from its work in creating Linked Learning. Linked Learning is a high school model that combines college-focused academics, rigorous technical education, work-based learning, and personalized student supports. ConnectEd provides assistance with capacity assessment and planning, pathway design and implementation, leadership development and coaching, pathway quality review and continuous improvement, instructional support, and work-based learning system development.

Leaving No Student Behind

While a system of this general design has proven—all over the world—to be a very powerful tool for raising student performance to the highest levels in the world at scale, it is particularly important for students from low-income and minority families. Although many Americans think the United States is nearly unique in having a lot of poor and minority students, the United States is actually about in the middle of the distribution of all the PISA countries. About 17% of the U.S. population lives below the national poverty line, which is roughly the same as Shanghai, Japan, and Germany. Hong Kong (20%) and Singapore (26%) have more poverty than the United States; all of these countries score much higher than the United States on PISA. In terms of the percent of students who are immigrants, the United States is roughly in the middle at 23% and Singapore is similar at 21%; Hong Kong (35%), Canada (30%), and New Zealand (27%) all have higher rates of first and second generation immigrant students, and again, score higher than the United States on PISA.

Most of these systems do not rely on multiple-choice, machine scored examinations. Most questions on their examinations are essay-based. They are therefore able to assess higher level skills and more kinds of skills than can be assessed with most of the assessments used in the United States, which gives their students a very important advantage in the global marketplace. But these top systems also publish both their exam questions and answers that earn high marks, along with an explanation, from the examiners, as to why the answer deserved high marks. In this way, the top performing countries strike a very important blow for equity, because this system has the effect of setting the same expectations for the homeless child in the center city as for the rich student in the suburbs. The standards are high and they are uniform. With examples of real student work that meets standards in front of them, students know exactly what they have to do to succeed. All of the top performing countries benchmark their academic and work ready standards to those of other top performing countries and in that way make sure that their standards are high enough to assure all students that, if they meet those standards, they will be globally competitive.

Precisely because these standards are high, the top performers pay a lot of attention to developing strategies for catching students who start to fall behind as early as possible and getting them back on track for success.

Ontario assesses school readiness at age five. Using a tool called the Early Development Instrument, they measure physical health and well-being, social competence, emotional maturity, language and cognitive development, communication skills and general knowledge. A little over 70 percent are judged ready; those that are not are given double-period math and/or literacy classes with specialized teachers through primary school. In addition, the Ontario authorities put a lot of effort into providing teachers with formative and diagnostic assessment tools that teachers can use to keep track of student progress and provide extra help when needed.

In Finland, all students get Individual Education Plans, based at the outset on the results of diagnostic tests given when students enter primary school. All Finnish school faculties include a special education teacher who is there to make sure that any student who needs special help gets it. During their careers in school, close to 70 percent of Finnish school children get special help at some time or other, which takes the sting out of being labelled a special education student. The vast majority of students are considered “special education” students in Finland at one time or another.

In Singapore, too, students are screened when they enter primary school. Children who need extra help are given a half-hour a day of extra reading time and four to eight additional periods of mathematics each week for the first year of primary school. At the end of the year, teachers make a determination as to whether to keep students in the program for a second year. This program has recently been expanded to the secondary schools as well.

In all of these systems, there is a massive effort to make sure there is a surplus of high quality teachers available for every school. In almost all of these systems, extra teachers are assigned to schools serving high proportions of disadvantaged students. In many of them, there are strong incentives for the best teachers to serve in schools serving high proportions of disadvantaged students.

But the commitment to enabling all students to get to high standards is most apparent in the way the top performers use their teachers’ time. Much less time is spent in front of students teaching. Much more is spent in other ways. For example, one of those ways in Singapore and Shanghai is an hour a week spent by all the teachers in a regularly scheduled meeting. One of the topics at those meetings is students whose daily formative evaluations indicates are in danger of falling behind. All the teachers of that student will talk with one another to exchange ideas as to what the problem is and what might be done about it. The result might be a commitment from one teacher to talk with the student’s parents or from another to conduct a diagnostic test or for another to make a change in teaching method. That team will keep checking on that student until he or she is back on track. Or the team might decide that the student needs regular tutoring to catch up and the teachers use some of the time they are not teaching during the regular school day to do that tutoring. Tutoring is not a special program with its own administration. It is a regular activity in the school, available to any student who needs it from the regular teachers, who are trained as, among other things, skilled tutors. In this way, all students, from the most gifted to those who need a lot of extra help to master the regular—but demanding—curriculum are able to do so with a minimum of labelling and a minimum of separation from the other students.

Building on Maryland’s Assets

While Maryland, like other states, does not have a system of the kind just described, it does have assets that can be built on to create a system of the kind just described.

Maryland was among the first states to develop the Maryland College and Career Ready standards built on the Common Core State Standards and measured by the PARCC tests that are aligned with the Common Core. At present, students are expected to reach that standard by the end of their junior year. It is also the case that Maryland has a different standard that all students are required to reach, and a defined set of state courses in subjects that are required, in order to graduate from high school. These elements can be built on to create a real qualification system set to global standards. To do that, one standard must be identified that students are expected to meet, and the age at which the standard is supposed to be met would have to be moved back to the end of the 10th grade; a defined set of pathways for the junior and senior years, benchmarked to global standards, would have to be created; and the 10th grade standard would also have to be set to a global standard, as well as aligned with Maryland's actual requirements for success in the first year of community college.

Maryland was one of the first states to implement a school readiness model for entering kindergarteners in the early 2000s. Every entering kindergartener was assessed using the model. The model was recently replaced with the Kindergarten Readiness Assessment (KRA), which is aligned with Maryland's College and Career Ready standards. Presently, the KRA is given only to a sample of entering kindergarteners unless the school and teachers agree that all kindergarteners will be assessed. This will be discussed further under Building Block #1.

The existing Maryland lesson plans and lesson seeds could be a good starting point for developing the kind of K-10 curriculum with full supports that typifies the instructional systems in the top performing countries. The level of literacy expected by the end of 10th grade would have to be benchmarked to the top performers expectations for their students at that grade level. Once that is done, a full trajectory of expectations—grade by grade or grade span by grade span—would have to be set for each subject required for graduation, through the 12th grade. Then course syllabi would have to be written or, where they exist, revised and refined and high quality exams created where needed. Examples of student work that meets the standards at the 10th grade level would have to be collected and explanations of why they meet the standards written.

If Maryland chooses to emulate the emerging global best practice with its career and technical education program as well as in its academic program, it would have to focus that program on the junior and senior year of high school, set it to a high academic standard, collaborate closely with the employer community in setting the technical standards for the curriculum, closely integrate the program with the postsecondary career and technical education program at its community colleges, so that the transition is seamless, and provide instructors who are deeply conversant with the state of the art in the occupations the students are training in. Maryland would also have to create opportunities for students to acquire a wide range of technical skills at employer work sites, which may require new State regulations on apprenticeship for minors, below market wages for apprentices and other adjustments to the current environment available to high school age students for acquiring the kinds of skills they will need in an age of rapidly advancing automation, neural networks and artificial intelligence.

Perhaps the greatest challenge for Maryland and other states, if they want to have a globally competitive education system, is the steps it will have to take to bring its students up to the level of academic performance found in the top performing countries. That is true for students at all levels but it is especially true for those who are most disadvantaged.

At present, far too many Maryland students leave high school reading at the 8th grade level or below based on community college remediation rates. In 2017, 49% of Maryland students taking PARCC English 10 received a score of 750 or higher (4 or 5), which is considered on track for college and career readiness (even fewer, 36%, received a score of at least 750 on PARCC Algebra I). For students reading below the 10th grade level, the kinds of measures that the top performers use to assess where students are when they enter the first grade (kindergarten in the United States) and frequently thereafter will be essential. Those diagnostics will have to be used to develop plans for each student to address his or her challenges straight on until that student is on track. Use of these strategies will spell the difference between success and failure for a very large fraction of Maryland students.

RECOMMENDATIONS

A SYSTEM THAT PREPARES STUDENTS FOR COLLEGE AND CAREERS

1. Maryland needs to modify its current policy on College and Career Readiness to create a system that has all the advantages of globally-emerging qualifications systems. Such systems enable their students to emerge from high school two to three years ahead of where Maryland's typical student is at present and ready for both demanding college-level work and no-less-demanding technologically-demanding careers. Such a system will require:
 - a. Moving the grade year by which students are expected to acquire levels of proficiency in mathematics and English literacy needed for success on adopted Maryland assessments (e.g., a score of 4 or 5 on the PARCC assessment) in the first year of community college to the end of 10th grade, on the understanding that some students may take as long as the end of their senior year to reach this standard.
 - b. Conducting a study of the actual requirements in mathematics literacy for success in the first year of a typical Maryland community college program to determine the appropriate mathematics assessment for college and career readiness at the end of 10th grade (e.g. Algebra I, Statistics, Algebra II).
 - c. Incorporating a science assessment into the requirements for college and career readiness by the end of 10th grade (science is already a high school graduation requirement) — and considering whether other subjects should be added.
 - d. Using PARCC as the State's measure of the literacy and mathematics requirements to be on track for college and career readiness, and for high school graduation, but

- beginning to plan for the use of high quality assessments in the event that PARCC is no longer available.
- e. Regularly evaluating and benchmarking graduation standards for all subject requirements to their equivalents in the top performing countries and states and regularly reporting the data, with a goal of raising graduation standards to the equivalent of top performing countries and states regularly over time.
 - f. Setting a goal that by a date certain students¹ will be expected to meet this on track for college and career readiness standard and schools will be held fully accountable for their success in helping students reach this standard. The Commission will propose such a date in its final report.
 - f.g. Requiring all Maryland high school students who are on track for college and career readiness by the end of 10th grade to be offered, by a certain date, rigorous pathways toward college and careers, including a high school upper division program consisting of the IB Diploma Program, the AP Diploma program, University of Cambridge Diploma Program or a program of similar academic rigor; a program consisting of all the courses required to get an Associate's Degree by the end of the senior year in high school (in collaboration with higher education institutions); and a high quality career and technical education program resulting in either an industry recognized credential or a credential entitling the holder to begin a demanding post-secondary program of technical education and training. The Commission will propose such a date in its final report during the 2018 interim.
 - g.h. Creating an early warning system as soon as possible based on formative evaluations that enable teachers to identify students who are beginning to fall behind and have teachers work together to get the student back on track. This process should be done in all grades. (see BB # 2 and 5).
 - h.i. For students who are not college and career ready by the end of the 10th grade, Maryland should build on its current transition course model. Interventions should include providing an evidence-based curriculum that is designed to help students catch up and targeting more teachers and resource personnel to struggling students. Students who are close to meeting the college and career ready standard at the end of 10th grade, or who meet the standard before the end of 12th grade, should have opportunities to participate in the college and career pathways, for example, by taking a co-requisite higher education course that includes remedial and credit-bearing coursework in a subject for which they are not yet college and career ready courses.

¹ It is understood by the Commission that college and career readiness may be different for students with the most severe disabilities, but the curriculum and instructional system, including standards and expectations, needs to be world-class for all students.

- j. Constructing clear curriculum frameworks in all grades K-10 for all required subjects for which a framework does not already exist, and using the curriculum frameworks to:
 - i. W-write sample course syllabi for each required subject in each required content area.
 - ii. Writing sample essay-based examinations for each grade, as appropriate, matched to each syllabus, to the extent required.
 - iii. Collecting examples of student work in each grade that meet the standards for each required subject and writing commentaries explaining why the work meets the standards so that teachers and students know exactly what is required to meet the standards. Requiring all community colleges to enroll students that achieve the 10th grade standard in credit-bearing coursework without remediation.
- ~~j.k.~~ Requiring all Maryland community colleges to enroll students that achieve the 10th grade standard in initial credit-bearing coursework without remediation. Setting a standard that students enrolling in four-year universities must achieve in order to enroll in credit-bearing coursework without remediation, and requiring public universities to enroll students meeting the standard in such courses.
- ~~k.l.~~ Setting a standard that students enrolling in Maryland four-year universities must achieve in order to enroll in credit-bearing coursework without remediation, and requiring public universities to enroll students meeting the standard in such courses.

CAREER AND TECHNICAL EDUCATION SYSTEM

- 2. While ~~building on the progress that~~ Maryland has made considerable progress in creating Career and Tehnical Education (CTE) programs~~in this arena~~, the ~~s~~State must make significant changes in its approach to CTE education if it wants to provide high develop the quality of such programs like those that at~~countries leading the way in this arena~~ have established. To this end, the Commission recommends: work hard to match the achievements of those countries that are in the lead in this arena by:
 - a. Creating two groups to improve the current CTE program.
 - i. The first group would be an ad hoc (non-permanent) group ~~formed by the Sstate~~ as soon as possible, to analyze the current CTE program and make recommendations to improve the program including the interrelatedness of CTE programs with workplace apprenticeships and higher education. ~~It~~The group would be composed of a select few individuals who~~that~~ have expertise in CTE programs (or related knowledge and experience) and on ~~the~~ needs of

the Maryland business community. ~~It and~~ would act independently from Maryland's education agencies. The group would (1) benchmark Maryland against the best CTE systems in the world, including Singapore and Switzerland, and, on the basis of that benchmarking; (2) building on successful efforts in Maryland, recommend a CTE curriculum framework, which would include an assessment of the needs of Maryland's economy and employers, youth apprenticeships and other offsite training opportunities; ~~evaluate Maryland's existing CTE program based on what is learned from the best systems and the needs of Maryland's economy and employers;~~ (3) ~~incorporate youth apprenticeships and other offsite training opportunities into the CTE system;~~ (34) recommend a governance structure to implement a robust CTE system comparable to the best such programs in the world; and (454) report back to the legislature and the governor on the steps that the State needs to take to develop a fully world-class career and technical education system. ~~This group would then be dissolved.~~

- ii. ~~A then~~ a second, permanent group would be formed to monitor the implementation of ~~ensure the recommendations are implemented~~ and to ~~ensure that those CTE programs are successful~~ hold school systems accountable for the success of their CTE programs. This ~~second~~ advisory group would advise ~~MSDE~~ the appropriate State agencies and school districts on its career and technical education programs and would be a larger group with representatives from appropriate State agencies—~~MSDE~~, leading Maryland employers, State economic development officials, relevant experts, and Maryland educators at the elementary and secondary and higher education levels.

b. Incorporating skill standards into the CTE curriculum—~~skill standards~~—including those for 'soft' skills—students will need to meet in the future that should be driving today's career and technical education programs.

b.c. ~~For students who are not college and career ready by the end of the 10th grade,~~ Maryland should build on its current transition course model. Interventions should include those identified in recommendation 1i. Students should also have opportunities to participate in CTE courses concurrently with being enrolled in transition courses.

e.d. Fully engaging employers in the design and provision of the workplace-based programs needed to equip students with both the theoretical and practical skills ~~needed~~ required to pursue rewarding careers in the future.

e. Launching a statewide initiative to rebrand CTE as providing valuable and value-added skills for all students and partnering with industry to develop a media campaign

~~d.f.~~ Collaborating with the State's community colleges to design a system in which very high quality career and technical education programs are offered to high school students with the assistance of community colleges and these high school programs are aligned with equally high quality community college technical programs, forming a continuous course sequence leading in some programs to advanced study in university.

e.g. Joining with a national network of states interested in benchmarking the best career and technical education programs in the world and in collaborating in the development of advanced systems for career and technical education, such as the Pathways to Prosperity and ConnectED.

LEAVING NO STUDENT BEHIND

3. Maryland must, like the top performers, measure the school readiness of all incoming kindergarteners and enable teachers to use the knowledge thus gained to create education plans for each child and for the school that reflect the professional judgment of the faculty of the school as to the measures that need to be taken to help each child get on track and stay on track to college and career readiness (see Building Block #1 for more details).
4. Maryland schools must, like Singapore, Finland, and Ontario, make whatever adjustments are needed in the normal program of the school to focus on the core needs of each child as revealed in the initial screening (see also Building Blocks # 1 and 2).
5. Maryland must provide every elementary teacher in the State and appropriate university faculty members responsible for the preparation of elementary school teachers training in tutoring techniques shown by research to be effective in teaching reading to students who enter first grade not yet ready to profit from on-grade instruction in reading and to students who remain behind in the primary grades. The ability to identify the differing needs of struggling learners and the skill to design appropriate intervention strategies should be built into the teacher preparation programs in all schools of education across the State as well as ongoing professional development for teachers (see also Building Blocks # 2, 5 and 6).
6. ~~Until~~ After the policy recommendations related to teacher training in Recommendations #4 and #5 above are implemented and ~~Until such time as~~ Maryland teachers routinely have the knowledge and time to do so during the regular school day, Maryland must invest in a program to train tutors for school-age students who are significantly behind in reading in the primary grades. ~~Minnesota has created such a program for reading and math tutors, and a similar program is operating on a limited basis in Maryland.~~ (See also Building Block # 2)

7. Maryland must make the same kind of investment in the tools needed for high quality formative evaluation of students that the top performers have been making, [as also recommended in Recommendation 1h above](#), so that regular classroom teachers develop high levels of expertise in the techniques needed to recognize in real time, almost immediately, during a class, which students do not understand or misunderstand the material, and also, the tools and knowledge needed to accurately diagnose the problem and identify ~~and~~ solution with a high probability of working. [\(See also Building Blocks # 2 and 5\)](#)

8. Maryland must develop policies to give regular classroom teachers the kind of time during the day away from their teaching responsibilities to work with other teachers ~~that teachers in the top performing countries have~~ to pool their observations of students who are experiencing trouble, to come up with solutions to those problems and together monitor student progress to make sure that the solutions are working; Maryland must also develop policies to give its regular classroom teachers much more time to tutor students who need that special attention to get on track and stay on track (see [also](#) Building Blocks [# 2 and 6](#) ~~for details~~)