



**BLUEPRINT**  
FOR MARYLAND'S FUTURE

# Blueprint for Maryland's Future: College and Career Readiness

## Roadmap to Implementation

August 2022 | Version 2



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## Document History

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The first version of this report was published in February 2022.

Version 2 of this report, this current version was published in August 2022. The sections with new or updated information, data, and discussion are listed below:

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# Executive Summary

*The Blueprint for Maryland's Future* was passed by the 2021 Maryland General Assembly session and now serves as the Maryland State Department of Education's driving force for making significant and lasting changes in its transformation to a world-class instructional system to improve the overall quality of education in Maryland. It presents an extraordinary opportunity and a pledge that all of Maryland's over 910,000 students will receive an excellent and equitable education, especially those who have been historically underserved. To fully implement *The Blueprint*, the Maryland State Department of Education is determined to engage diverse stakeholders, researchers, and subject-matter experts to ensure all new policies and innovative approaches are in alignment with each of the five key policy areas.

## ***The Blueprint for Maryland's Future Policy Areas:***

Policy Area 1	•Early Childhood Education
Policy Area 2	•High-Quality and Diverse Teachers and Leaders
Policy Area 3	•College and Career Readiness
Policy Area 4	•More Resources for Student Success
Policy Area 5	•Governance and Accountability

This report presents an update on the preparation for implementing Policy Area 3: College and Career Readiness, which reimagines what today's students must know and be able to do by the end of the 10th grade. *The Blueprint* establishes the standard that will signify a student is college and career ready. Once a student is designated as meeting or exceeding the CCR standard, they choose which of three equally challenging Post-CCR pathways they want to pursue. For students who need additional support to meet the CCR standard, they will receive customized individualized supports.

Through the input of key stakeholders, MSDE has identified guiding principles for the implementation of a new CCR system, grounding in:

- Moving beyond using standardized test scores as the only measure of CCR
- Equitable access to Post-CCR Pathways
- Post-CCR Pathways that enable students to explore elective enrichment and academic opportunities

In late 2021 and early 2022, MSDE reviewed the time necessary for LEAs to design and successfully implement any new or updated courses and programs, and MSDE found that the implementation dates specified in HB 1372 (2021) would need to be altered to ensure successful implementation and alignment between Post-CCR and Support Pathways. MSDE worked with the Accountability and Implementation Board and the General Assembly to ensure that the upcoming process allows for the best opportunities for students. In the Spring of 2022, the General Assembly passed HB 1450 (2022)<sup>1</sup>, which created alignment between the Post-CCR pathways and the Support pathways, with both pathways now beginning in the 2023-2024 school year.

<sup>1</sup> <https://mgaleg.maryland.gov/mgaweb/Legislation/Details/hb1450>

# Background

## By The Numbers: A Look At State Academic Data

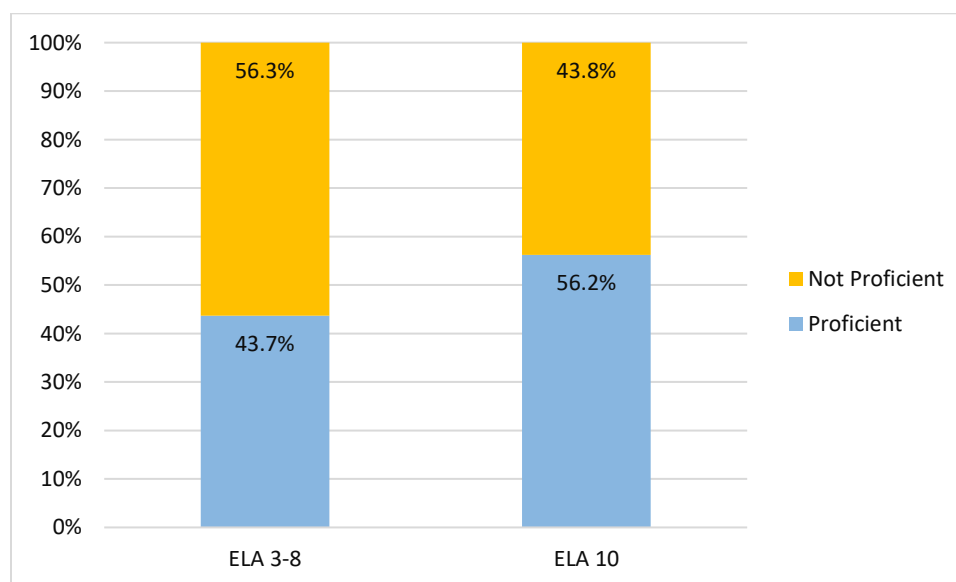
Student achievement, graduation rate, and postsecondary enrollment data for Maryland students, especially for underserved student populations, signal the need to rethink how we prepare our students to succeed in and through college and in their careers. Standardized assessments, including the Maryland Comprehensive Assessment Program (MCAP) and the Partnership for Assessment of Readiness for College and Career (PARCC) measure student learning and communicate whether students meet or exceed grade level expectations for the Maryland College and Career Ready Standards for English language arts and mathematics.<sup>2</sup> Since 2015, the scores achieved in these standardized assessments, graduation rates, and postsecondary college enrollment have been used to assess students' progression towards postsecondary success and areas of improvement.

### STUDENT ACHIEVEMENT DATA: STATE STANDARDIZED TESTS

From 2015-2019, annual PARCC scores assessed student learning and served as standardized data sources for school systems and schools to identify and to provide interventions or enrichment to students based on grade level content.<sup>3</sup>

In 2019 less than half of students in grades 3-8 English Language Arts scored proficient and just over 50 percent met the College and Career Ready Standard by grade 10. Figure 1 shows the percentage of students who scored "proficient," defined as scoring a level 4 or 5, out of 5 performance levels, on the English Language Arts/Literacy PARCC exams.

**Figure 1: English Language Arts Proficiency Rates by Grade Level, PARCC 2019**



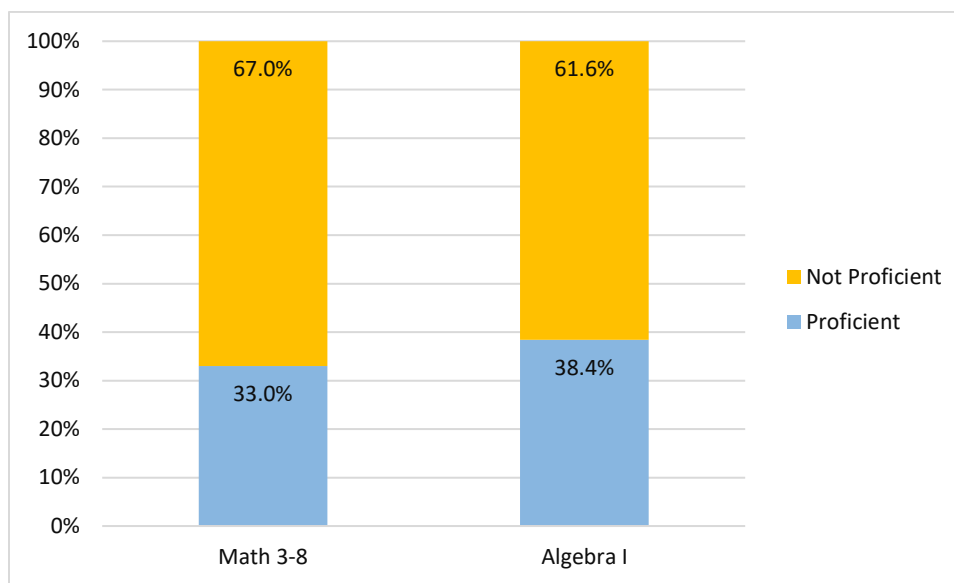
Note: ELA 10 proficiency rates only include first time test takers.

<sup>2</sup> Maryland College and Career Ready Resources <https://marylandpublicschools.org/programs/Pages/MD-CCRS/index.aspx>

<sup>3</sup> Additional data and information not included in this discussion is available on MSDE's website. For a complete understanding of Maryland students' performance on standardized assessments, please see: <https://marylandpublicschools.org/stateboard/Documents/08272019/TabD-MCAP.pdf>

Less than 40% of students at all grade levels met the standard for proficiency in math in 2019. Figure 2 shows the percentage of students who scored proficient, defined as performance level 4 or higher (out of 5 levels), on the PARCC Mathematics exams.

**Figure 2: Mathematics Proficiency Rates by Grade Level, PARCC 2019**



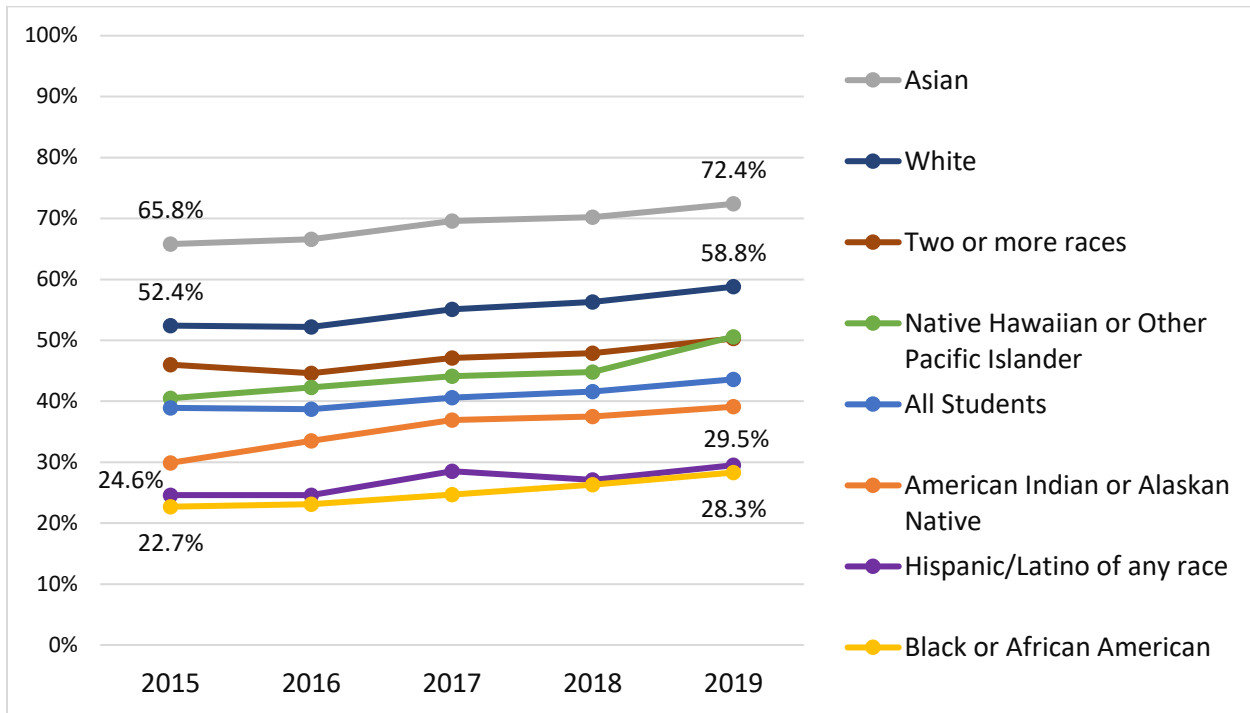
Note: Algebra I proficiency rates only include first time test takers.

Beginning in the 2020-2021 school year, Maryland implemented the MCAP assessment program. Students were first assessed in the fall of 2021 (rather than at the close of the prior school year). This Early Fall 2021 data showed an even further decline in student proficiency in English and math. While Maryland's overall results reflect similar trends seen nationally, MCAP proficiency rates of 35% in English Language Arts and 15% in mathematics for grades 3-8 are alarming.<sup>4</sup> English results show almost a nine-percentage point decline from 2019, while mathematics results indicate an 18-percentage point decline, or less than half of the 2019 rate.

State assessment data also shows large disparities in performance between student groups. For example, in 2019, 72.5% of Asian students scored "proficient" on PARCC tests in English in grades 3-8, compared to 58.8% of White students, 29.5% of Hispanic/Latino students, and 28.3% of Black/African American students. The differences in the proficiency between the groups with the highest and lowest rates has largely remained constant from 2015 and persist despite any overall gains in achievement throughout the state over the same period of time. Disaggregated data by race/ethnicity for PARCC results is illustrated by Figure 3.

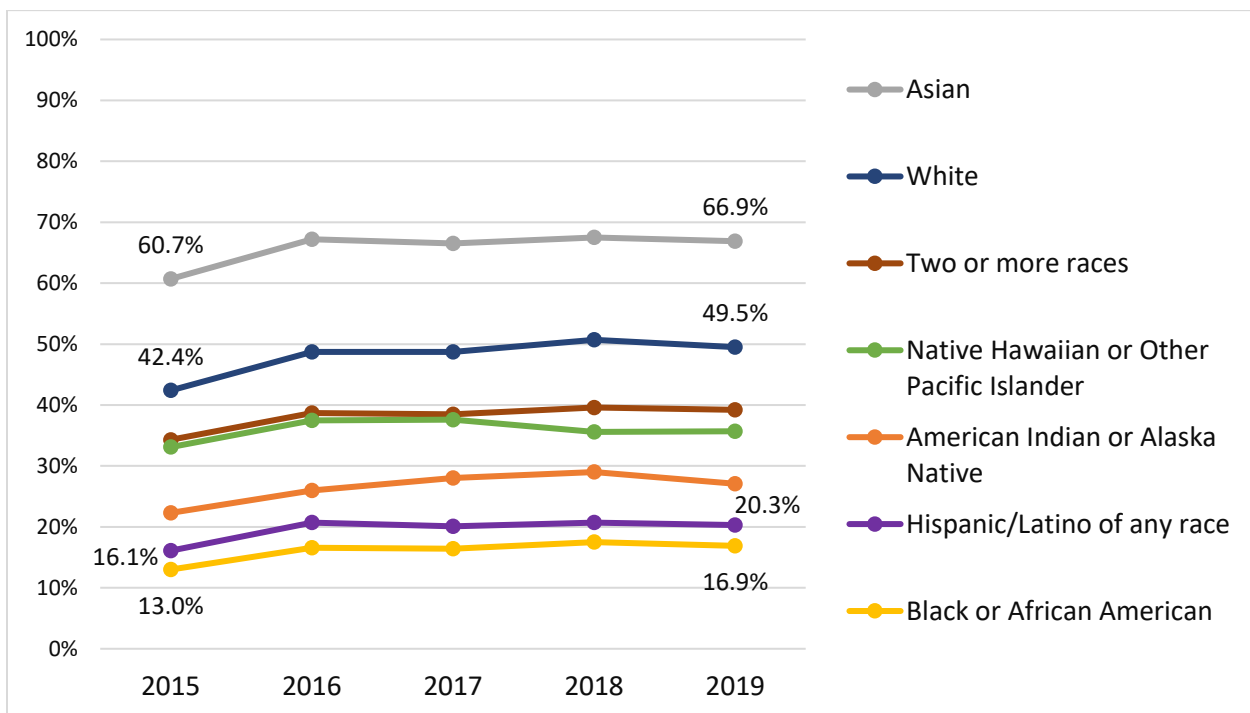
<sup>4</sup> Press Release, December 8, 2021. Maryland Early Fall Assessment Data and Kindergarten Readiness Results Reflect National Trends on Learning Loss. <https://news.maryland.gov/msde/maryland-early-fall-assessment-data-and-kindergarten-readiness-results-reflect-national-trends-on-learning-loss/>

**Figure 3: Percent of Students at Performance Level 4 or Higher by Race/Ethnicity, ELA 3-8**



Mathematics data show a similarly concerning trend. Figure 4 shows a gap of approximately 50 percentage points in the proficiency rates between the highest and lowest performing groups in math grades 3-8.

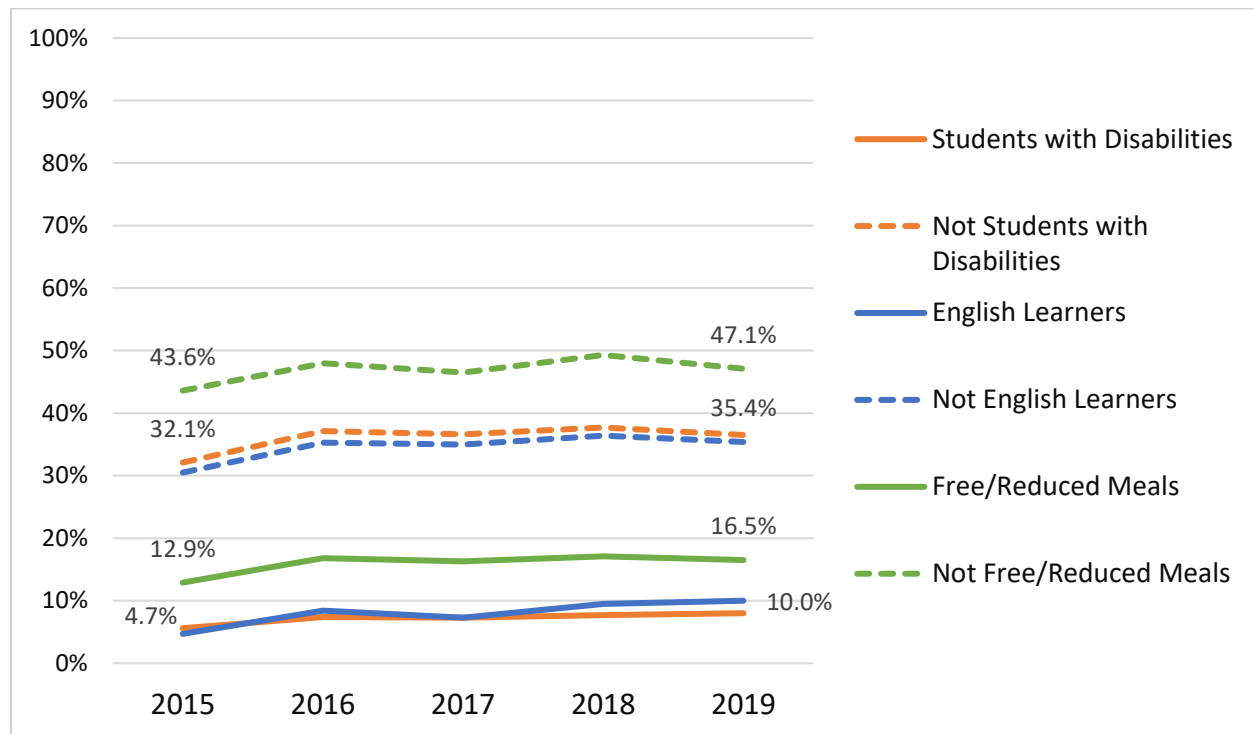
**Figure 4: Percent of Students at Performance Level 4 or Higher by Race/Ethnicity, Math 3-8**



The lack of progress and persistent differences between student groups also appear when looking at student service groups (Figure 5). For example, 2019 PARCC assessment data in grades 3-8 showed that 16.5% of students eligible for free or reduced price meals achieved a performance level of 4 or higher, while 47.1% of students not receiving free or reduced price meals achieved the same performance levels.<sup>5</sup> This 30-percentage point difference in proficiency rates has largely remained constant from 2015 to 2019.

Figure 5 also shows low proficiency rates and persistent differences between student groups for students with disabilities and students who are English learners. Assessment data in English language arts for grades 3-8 and for high school assessments in Algebra I and English 10 illustrate similar themes.

**Figure 5: Percent of Students at Performance Level 4 or Higher by Service Group, 2015-2019, Math 3-8**



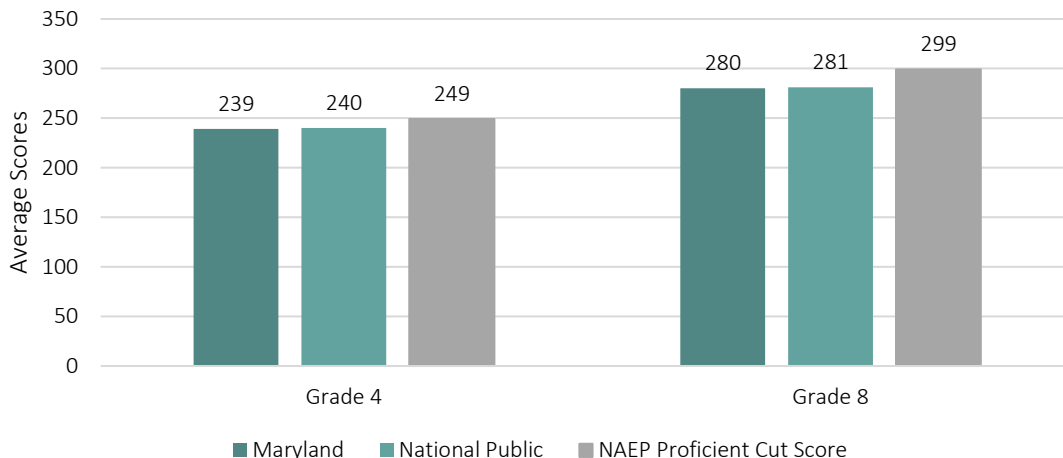
<sup>5</sup> Maryland State Board of Education meeting shared publicly available presentation: 2019 Maryland Comprehensive Assessment Program (MCAP) PARCC English Language Arts (ELA) and PARCC Math Results. <https://marylandpublicschools.org/stateboard/Documents/08272019/TabD-MCAP.pdf>



### MARYLAND'S PERFORMANCE ON NATIONAL ASSESSMENTS

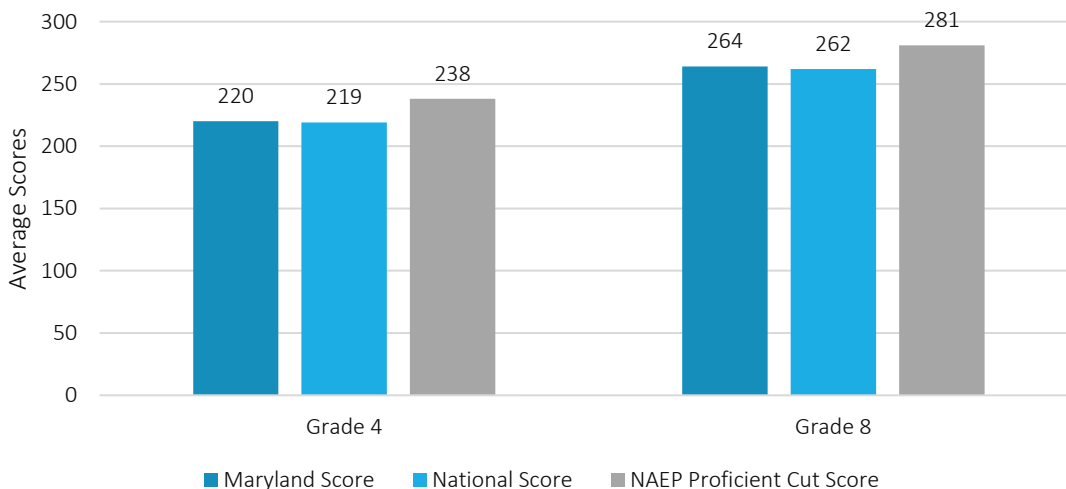
While the MCAP (Maryland Comprehensive Assessment Program) can be used to describe the degree to which each student has mastered the expected knowledge and skills associated with grade level Maryland content standards, it does not provide any information on how Maryland is performing compared to the rest of the nation. The National Assessment of Educational Progress (NAEP)<sup>6</sup>, administered every two years in each state, allows for a national comparison by using a representative sample of 4<sup>th</sup> and 8<sup>th</sup> grade students' knowledge and skills in math and reading. The most recent administration of the NAEP from 2019 showed 4<sup>th</sup> and 8<sup>th</sup> grade Maryland students, representing schools sampled throughout the state, performed similarly to the national average, yet substantially lower than the proficiency cut score.<sup>7</sup> Figures 6 and 7 provide a snapshot of this data.

**Figure 6: NAEP Math average scores and proficiency cut score, 2019**



Note: The difference between the average Maryland score and all national public school students is not statistically significant.

**Figure 7: Average NAEP Reading scores and proficiency cut score, 2019**



Note: The difference between the average Maryland score and the average score for all national public school students is not statistically significant.

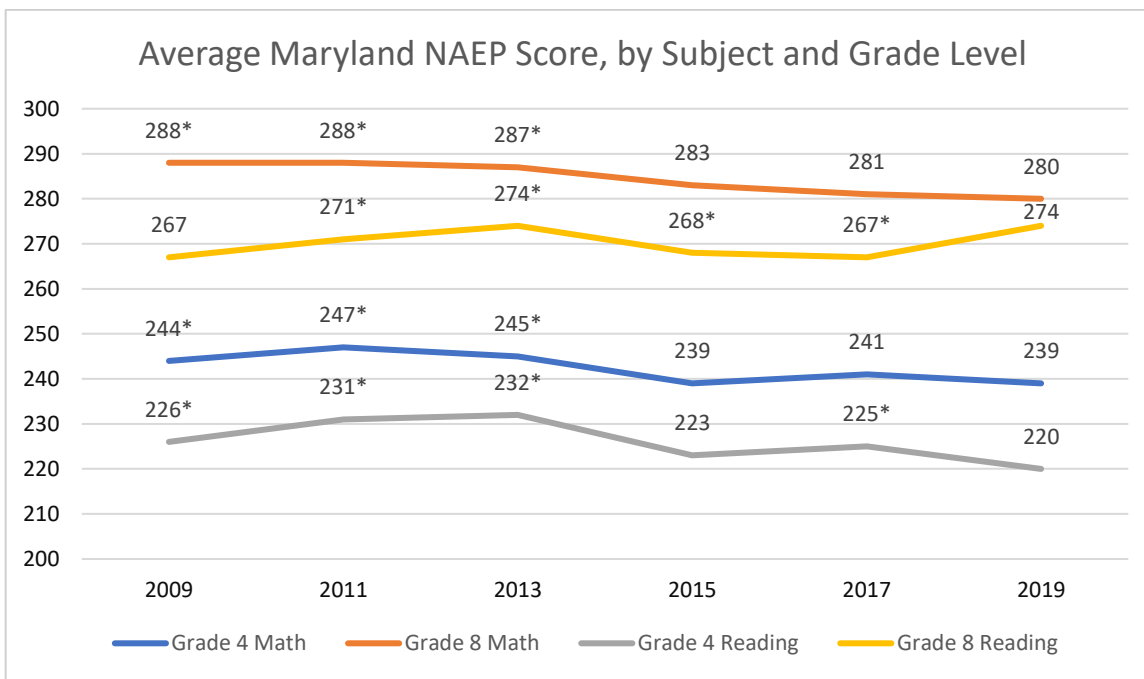
<sup>6</sup> National Assessment of Educational Progress.

<https://www.nationsreportcard.gov/profiles/stateprofile?chort=1&sub=MAT&sj=&sfj=NP&st=MN&year=2019R3>

<sup>7</sup> The difference between the average NAEP score for Maryland that for the entire nation is not statistically significant.

Even though the average score for Maryland students is comparable to the nation, Maryland's performance on the 4<sup>th</sup> and 8<sup>th</sup> grade reading and math NAEP over the last ten years illustrates a troubling trend (Figure 8). With the exception of Grade 8 Reading, average NAEP scores in Maryland in 2019 were at their lowest points in at least a decade. Maryland's average Grade 4 Math score in 2019 was 6 points lower than in 2009, Grade 8 Math was 8 points lower, and Grade 4 Reading was 6 points lower.

**Figure 8: Average Maryland NAEP scale scores by grade level and subject from 2009 to 2019**



\*Indicates the average score was significantly different (p<.05) from 2019.

While NAEP does not provide numerical rankings of each state's performance, Maryland's performance on the test can be distinguished statistically from jurisdictions scoring significantly higher and significantly lower. Figure 9 shows that in 2019, the number of jurisdictions that performed significantly higher than Maryland was greater than the number of jurisdictions that performed significantly lower in both Grades 4 and 8 Math, while, in Reading, a similar number of jurisdictions scored higher and lower than Maryland in Grade 4 and more than twice as many jurisdictions scored lower than scored higher in Grade 8.

**Figure 9: Relative performance of Maryland on the 2019 NAEP, by grade level and subject**

	# of jurisdictions that performed significantly higher than MD	# of jurisdictions whose performance was not significantly different from MD	# of jurisdictions that performed significantly lower than MD
Grade 4 Math	16	27	9
Grade 8 Math	22	14	16
Grade 4 Reading	9	34	8
Grade 8 Reading	7	28	16

Note: Data include all 50 states, Washington, DC, Department of Defense Education Activity, and Puerto Rico. NAEP does not provide national rankings of jurisdictions because the average scores of many states are not statistically different than those just above or below them.

While NAEP does not account for student demographics in published results, demographics are also an important consideration. The Urban Institute publishes adjusted NAEP scores which account for demographic differences across students in each state, rather than comparing states with vastly different student populations. The adjustments include factors such as race, receipt of special education services, and status as an English language learner. Their analysis underscores the importance of considering student characteristics along with performance. The states that “break the curve” under this analysis are the states that perform better than demographically similar states. These analyses show that a student’s demographics, and the state’s demographic population, must be considered and addressed in all aspects of teaching, learning, and the greater school environment.<sup>8</sup>

**Figure 10: NAEP scores adjusted for demographics**

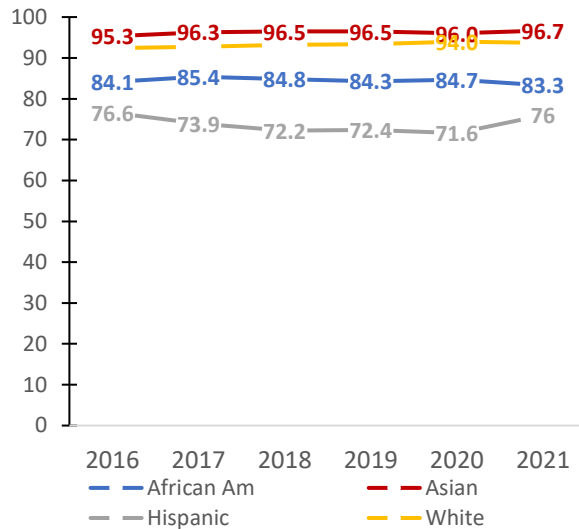


<sup>8</sup> Matthew Chingos, “Breaking The Curve: Promises And Pitfalls Of Using NAEP Data To Assess The State Role In Student Achievement,” Urban Institute (October 2015). <https://www.urban.org/research/publication/breaking-curve-promises-and-pitfalls-using-naep-data-assess-state-role-student-achievement>

### Graduation Rate Data

Trend data of four-year high school graduation rates from 2016 to 2021 shows large gaps across student groups in Maryland. Figure 11 shows the graduation rate of the two largest race/ethnicity student groups by population and Figure 12 shows the graduation rate for English learner students.

**Figure 11: Four-year Adjusted Graduation Rate Among Student Groups: 2016-2021**



**Figure 12: Four-Year Graduation Rate for English Learners: 2016-2021**

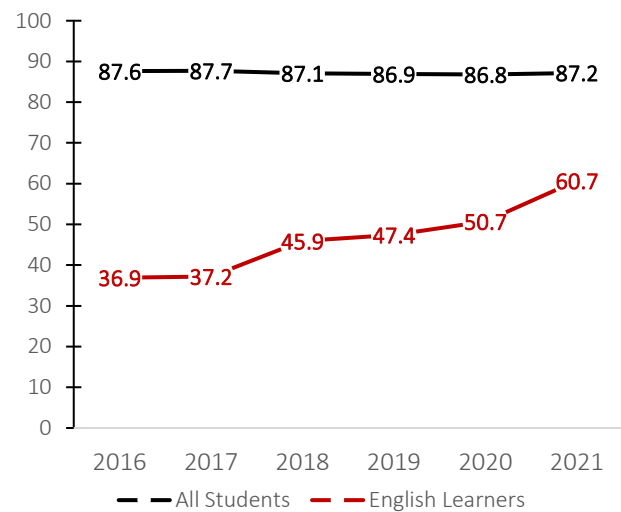


Figure 11. Shows a comparison of Maryland's four-year graduation rate for African American, Asian, Hispanic, and White student group populations. Figure 12. Shows a comparison of Maryland's four-year graduation rate for all students compared to English learners. Source: Maryland Report Card, graphs generated by MSDE.

### Postsecondary Data

Maryland postsecondary data is collected to show the percentage of high school graduates who enroll in a college level course after high school graduation. Disaggregated data is collected for all student groups including all races and ethnicities, students receiving special services, and by gender, shown in Figure 13.

**Figure 13: College Enrollment (Within 12 Months) Trend Data, 2016-2020**

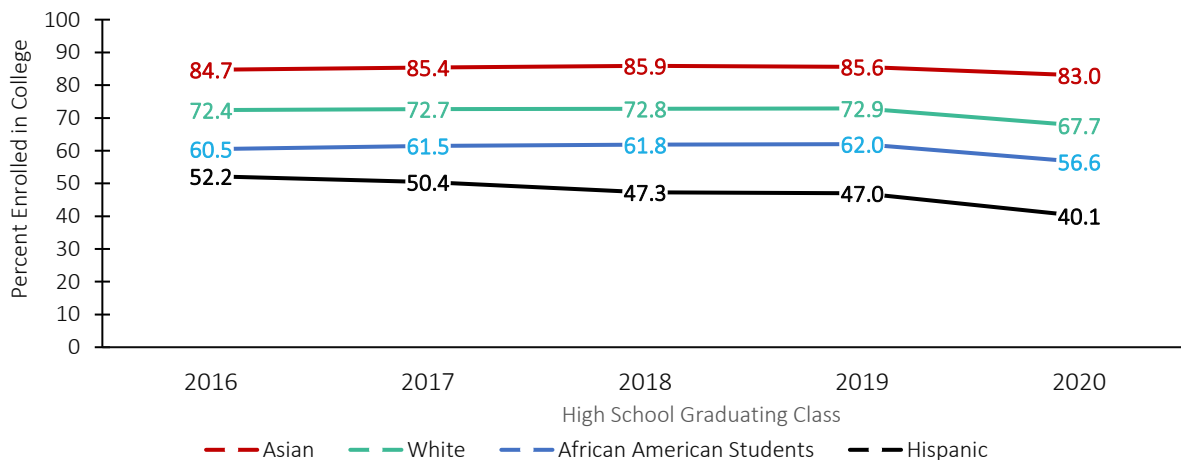


Figure 13. Shows percentage of African American, Asian, Hispanic, and White students who enrolled in a postsecondary institution within 12 months after graduating from high school. Source: Maryland Report Card, graph generated by MSDE.

# Section 1: CCR Standard

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The Maryland State Department of Education is committed to implementing the *Blueprint for Maryland's Future* so that each student enrolled in public school, regardless of the student's race, ethnicity, gender, zip code, socioeconomic status, or the language spoken at home, meets the College and Career Readiness standard by the end of the 10th grade. *The Blueprint* calls for a clear definition of a college and career readiness standard and a system of assessments that ensure students are reaching their goals and receiving the support needed.

## CURRENT COLLEGE AND CAREER READINESS STANDARD

*The Blueprint for Maryland's Future* has a central goal of ensuring that all Maryland public school students are College and Career Ready before graduation, thus signifying an ability to transition successfully to postsecondary coursework at a two- or four-year institution or to the workforce. All instruction and assessments in public schools should work toward this goal of preparing students to be ready for college and career. To actualize this vision, the standard of what it means to be college and career ready needs to be defined and then set as the north star for PreK-12 education. *The Blueprint* set the preliminary CCR standard to be measured by meeting or exceeding the content standards (earning a score of 4 or 5 on the PARCC) on high school assessments.

The Maryland State Board of Education (SBOE) reinforced this standard on February 22, 2022 by adopting a policy starting in the 2021-2022 school year, stating students are considered college and career ready when they have met or exceeded a metric in both English and Math, as defined by these options:

- **English** - College and Career Ready metrics
  - English 10 assessment
    - Score 4 or 5 on the PARCC
    - Score 2 or 3 on Early Fall MCAP (September 2021)
    - Score 3 or 4 on Fall Block and Spring MCAP (December – January or March – May)
- **Mathematics** - College and Career Ready metrics
  - Algebra I, Algebra II, or Geometry assessment
    - Score 4 or 5 on the PARCC
    - Score 2 or 3 on Early Fall MCAP (September 2021)
    - Score 3 or 4 on Fall Block and Spring MCAP (December – January or March – May)
  - Score of 520 on the Math SAT

The Blueprint also directs MSDE to contract with an external research organization to conduct an empirical study of the skills, knowledge, and abilities needed to succeed in the first year of Maryland community college coursework. The research study should then determine whether the College and Career Readiness standard set by the State Board of Education aligns with and accurately identifies which students have gained the requisite knowledge to succeed in community college. It should be noted that career readiness includes the demonstration of requisite academic, technical, and employability skills.<sup>9</sup> The study should also test any additional indicators of readiness, and further study the alignment between Maryland College and Career Ready Standards and currently adopted content standards required by postsecondary institutions and industry. Finally, the study should examine top-performing educational systems throughout the world and

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<sup>9</sup> Advance CTE: State Leaders connecting Learning to Work. <https://careertech.org/>

consider potential sources of bias in assessments used to determine college and career readiness. If necessary, based on the results of the research study, MSDE will propose revised CCR standards to the State Board of Education for approval.

## COMMISSION OF RIGOROUS RESEARCH STUDIES

To fulfill the requirements of *The Blueprint*, it is necessary to determine the alignment of Maryland's CCR standards against national and international best practices and to consider potential sources of bias. MSDE is commissioning two separate research studies to define and verify the CCR standard and how it will be measured. The studies will address the long-term necessity of ensuring alignment of the components of the CCR standard and the assessments, as well as the short-term necessity of ensuring current high school students are prepared to succeed in college.

*The Blueprint* legislation articulates requirements for the research organizations completing these studies of the CCR standard; however, with the additional context from other research and best practices together with internal expertise, MSDE is expanding the scope of work agreements to prepare Maryland students to succeed. Statute dictates that the study must:

- Determine the levels and types of literacy in reading, writing, and mathematics that are needed to succeed in entry-level courses and postsecondary training offered at community colleges in the state
- Examine top-performing educational systems throughout the world, comparing these systems to the education offered in the state
- Consider potential sources of bias in any proposed assessments and strive to eliminate any potential bias in a proposed CCR modification

### Study One: Exploratory Study

MSDE has partnered with the Maryland Assessment Research Center (MARC) at the University of Maryland to complete a short-term quantitative study to explore the relationship between high school state and national standardized tests, and other potential predictors of success measured in high school (such as course grades), and actual success in postsecondary coursework and/or workforce outcomes.

The completion of the study process will result in a measure that best predicts whether a student is ready for college and career, without a disproportionate impact on any particular student group. Meeting this college and career readiness standard should be achievable through multiple methods that allow individual students to demonstrate their skills based on their strengths. To enable Maryland to build these other methods, the research study will evaluate the alignment and predictive abilities of indicators such as:

- State standardized tests for high school students
- National standardized test scores (SAT and ACT)
- High school course grades in math, ELA, and science, and high school GPA
- "Concentrator" status for career and technical education (meaning a student has completed two or more courses in a program of study)
- Successful completion of a career and technical education apprenticeship
- Earned industry-recognized credentials as part of a career and technical education program of study
- Other measures that the community colleges use for placement decisions (could include AP, IB, and dual enrollment course and assessment results)

Students should also be able to demonstrate success in higher education through multiple methods. This component is especially important as *The Blueprint* dictates that all community colleges in Maryland shall accept

for enrollment in credit-bearing courses all students who meet the Maryland CCR Standard. Potential definitions of success that will be evaluated in the research study may include:

- First-year postsecondary GPA, at both two- and four-year institutions
- Cumulative postsecondary GPA, at both two- and four-year institutions
- Credit attainment in entry-level courses in math, ELA, and science
- College persistence and completion
- Earning professional licensure
- Employment two quarters after exiting from high school and/or enrollment in postsecondary education

### Study Two: Long-Term Study

To complete the long-term study, MSDE has published a Request for Proposals (RFP) for well-regarded external research organizations to apply. This RFP was open for responses between May and July 2022 and will be awarded for the study to commence as soon as possible. The specifications for the RFP are available on the eMaryland Marketplace Advantage (eMMA)<sup>10</sup>.

The RFP asks the research organization to perform a deep content analysis to determine the skills and knowledge necessary to succeed in the first year at a community college or 4-year college or university in Maryland. The definition of the CCR standard may be based primarily on the alignment to community colleges; however, MSDE also has a responsibility to the portion of students who will matriculate directly into a 4-year university and to careers. Maryland schools should strive to prepare its students not just to be “ready,” but to be equipped to thrive in any postsecondary or career environment.

The long-term study will:

- Explore the alignment between Maryland College and Career Ready Standards and the content of entry-level credit-bearing postsecondary courses and postsecondary training.
- Explore the alignment between Maryland College and Career Ready Standards and the content of remedial postsecondary courses.
- Explore the alignment between Maryland College and Career Ready Standards and the measures used by postsecondary institutions to place students in entry-level, credit-bearing postsecondary courses.
- Examine top-performing educational systems throughout the world, comparing these systems to the education offered in Maryland. Specifically, (a) how those systems identify students as “college and career ready,” and (b) the knowledge/skills students in those systems should have if they are identified as “college and career ready.”
- Consider potential sources of bias in assessments used to determine college and career readiness, and strive to eliminate any potential bias in a proposed CCR modification.
- Include a quantitative portion that will verify and expand on the findings of the exploratory study.

### MOVING BEYOND STANDARDIZED ASSESSMENTS

MSDE's guiding CCR implementation principles include establishing that multiple measures for demonstrating college and career readiness be considered. Traditionally, standardized assessments such as SAT, ACT, and state-administered assessments such as the PARCC were used to predict a student's readiness for college and career. To consider other types of measures, and perhaps more equitable measures, MSDE will explore if other indicators of success, such as local assessments, performance assessments, dual enrollment course completion, GPA, CTE

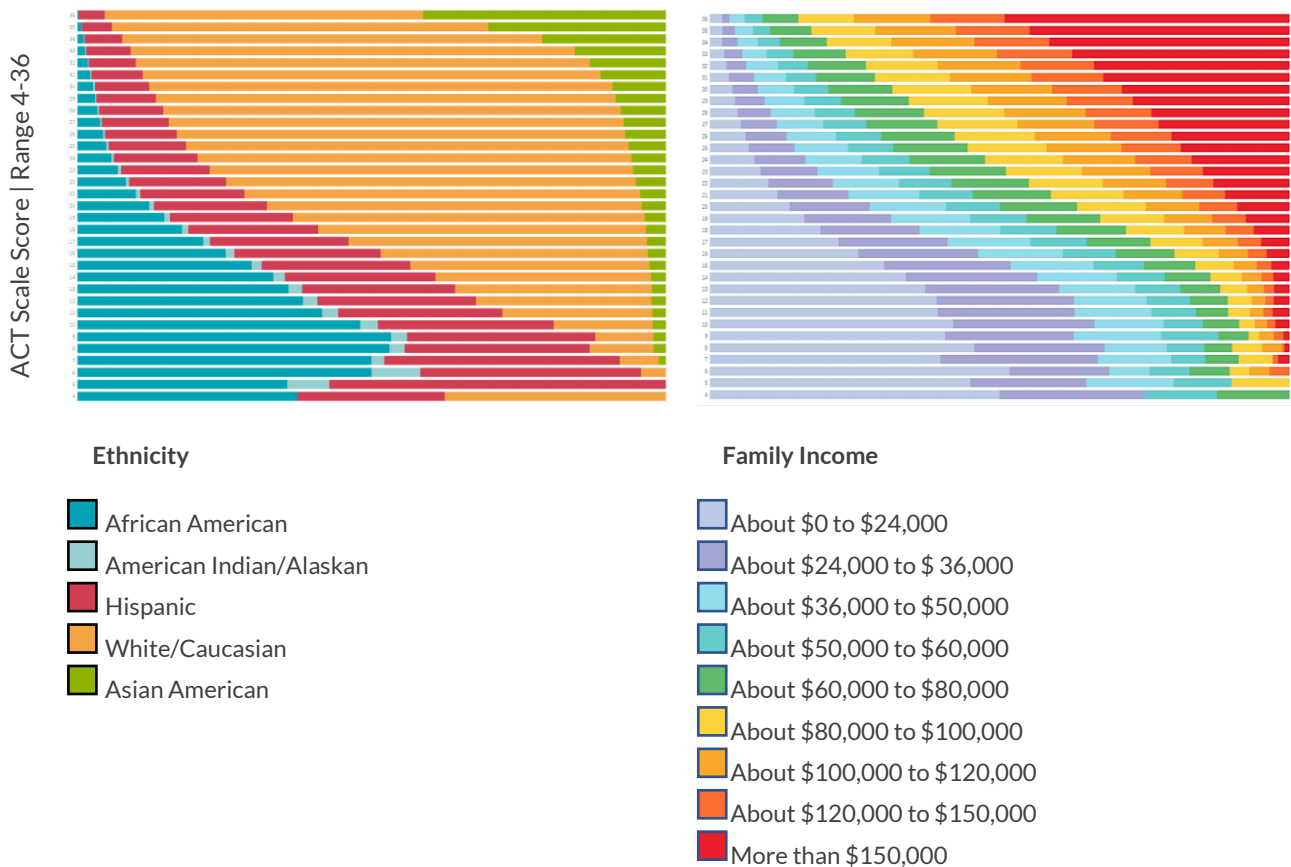
<sup>10</sup> [https://emma.maryland.gov/page.aspx/en/bpm/process\\_manage\\_extranet/47111](https://emma.maryland.gov/page.aspx/en/bpm/process_manage_extranet/47111)

Concentrator course completion, completion of an apprenticeship, or earning an industry-recognized credential could be used as indicators of a student's readiness.

The SAT and ACT have been widely used as primary predictors of college readiness and continue to be used at many postsecondary institutions in determining college admissions, financial aid decisions, and in some cases, placement into remedial or credit-bearing courses. While the intended use of these assessments is their ability to forecast how a student may perform in their first year in college, trend data of over 1.6 million high school graduates during a 12-year period indicated that test scores may be influenced by socioeconomic factors<sup>11</sup>. There specifically appears to be a strong correlation with a student's family income or levels of parental education with higher standardized test scores. Findings show that the more money a student's parents earn and the higher the education level they have completed, the more likely a student will score higher on these assessments.<sup>12</sup> Figures 14 and 15 illustrate an example of the impact of family income on standardized test scores. Together they show the juxtaposition of scores, ethnicity, and family income, and thus should call into question the reliability of what is being measured by the ACT assessment<sup>13</sup> and other similar measures. These practices present a compelling argument in using multiple methods, in lieu of SAT or ACT scores, such as high school GPA or class rank.

Figure 14: ACT Scores by Race and Ethnicity, 2018

Figure 15: ACT Scores by Family Income



<sup>11</sup> Geiser, Saul (2020). Norm-Referenced Tests and Race-Blind Admissions: The Case for Eliminating the SAT and ACT at the University of California. From the book, *The Scandal of Standardized Tests: Why We Need to Drop the SAT & ACT*. Teachers College Press.

<sup>12</sup> ACT content source: <https://www.brookings.edu/blog/the-avenue/2019/05/17/students-need-more-than-an-sat-adversity-score-they-need-a-boost-in-wealth/>. Produced by the Hechinger Report.

<sup>13</sup> Graphs Source: Boeckenstedt, Jon. "Some Final Thoughts on the SAT and ACT." <https://jonboeckenstedt.net/2020/01/10/some-final-thoughts-on-the-sat-and-act/> (Accessed October 12, 2021)

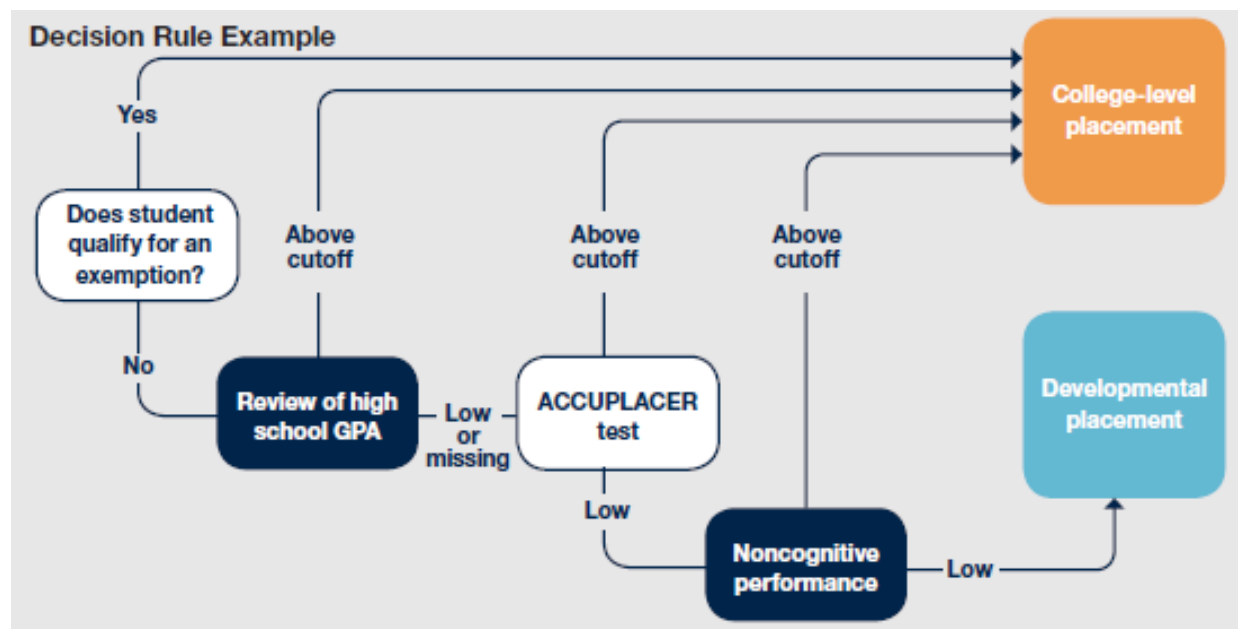


## Multiple Measures Placement Systems

Additional research from The Center for the Analysis of Postsecondary Readiness, a partnership between the Community College Research Center at Teachers College, Columbia University, and the social policy research organization MDRC, has shown that when determining a student's college readiness and placement into credit bearing courses (rather than remedial courses) at community colleges, using only standardized tests to make the determination can be inadequate and lead to inaccurate decisions. However, integrating multiple measures into the placement decision process creates more accurate decisions and allows more students to enroll and pass credit-bearing courses. These multiple measures may include any or all of a list of criteria including high school GPA, SAT Score, Accuplacer score, time since high school graduation, noncognitive assessments, and others.<sup>14</sup>

All placement systems require a decision on what constitutes college-readiness. While selecting a cut score on a single measure is relatively straightforward, the process is more complex when more than one measure is involved. One of the systems that can be used with multiple measures is a "Decision Rule System." Decision rule systems generally consist of a series of "if-then" statements and may be hierarchical. The college will set up a flow where they will check the student's credentials against a series of thresholds, and see if the student surpassed any of these minimum options. An example of this flow is shown in Figure 16.

Figure 16<sup>15</sup>



Another placement system involves using "Decision Bands," where decision rules apply only to students who fall within a certain range on a specified indicator (such as high school grade point average or a placement test score), as shown in Figure 17. Students who score just below a college-level placement test cut score could be further assessed using high school GPA or the results of a noncognitive assessment.

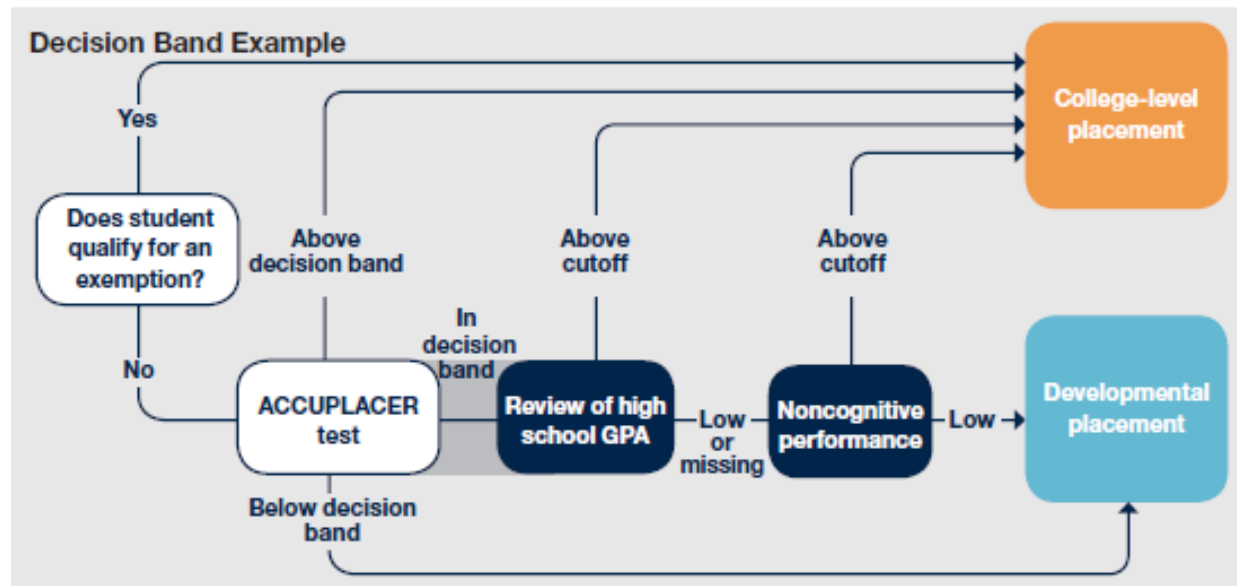
<sup>14</sup> Barnett, E., Kopko, E., Cullinan, D., & Belfield, C. (2020). Who should take college-level courses? Impact findings from an evaluation of a multiple measures assessment strategy. Center for the Analysis of Postsecondary Readiness and MDRC.

<https://postsecondaryreadiness.org/wp-content/uploads/2020/10/multiple-measures-assessment-impact-findings.pdf>

<sup>15</sup> Barnett, E., Kopko, E., Cullinan, D., & Belfield, C. (2020). Who should take college-level courses? Impact findings from an evaluation of a multiple measures assessment strategy. Center for the Analysis of Postsecondary Readiness and MDRC.

<https://postsecondaryreadiness.org/wp-content/uploads/2020/10/multiple-measures-assessment-impact-findings.pdf>

Figure 17



A final system involves using a Placement Formula algorithm. Here, a placement formula is developed that weights and combines many measures at once, resulting in a placement score for each student. This placement score is then used to assign students to specific classes.

A series of randomized controlled trial studies were conducted that evaluated the use of these multiple measure systems for course placement and the academic success of the students who participated in these studies. Students were randomly assigned to either be placed using multiple measures, or by using traditional standardized assessments. The multiple measure systems used allowed more students to be “bumped up” into qualifying for credit-bearing courses, but would not disqualify any students who met the traditional standard.

These students who were placed into the credit-bearing courses based on the multiple measures were 8–10 percentage points more likely to complete a college-level math or English course within three terms than they would have been if forced to take remedial courses. Additionally, all gender, Pell recipient status, and race/ethnicity subpopulations considered (with the exception of men in math) had higher rates of placement into college-level courses using the alternative system. While disparities in academic achievement will not be eliminated with these multiple measures, it does allow some students of minority groups to have a better chance of succeeding in college than they would have otherwise.<sup>16</sup>

### Recent Updates in Maryland

Informed by research such as these figures above and after reflecting on the implications of the Covid-19 pandemic, the University System of Maryland has recently removed the admission requirement to include SAT or ACT scores for the universities in the state. In June 2022, the USM Board of Regents voted to remove the SAT/ACT requirement for the system. Each individual university now has the option to require test scores or not. In response to this decision, Darryl Pines, the president of the University of Maryland at College Park, said that “We decided to communicate to our future students that we’re extending test optional (to) 2027, so that we can understand the data post-pandemic as to how well students are doing.”<sup>17</sup> Each university is still in the process of

<sup>16</sup> Barnett, E., Kopko, E., Cullinan, D., & Belfield, C. (2020). Who should take college-level courses? Impact findings from an evaluation of a multiple measures assessment strategy. Center for the Analysis of Postsecondary Readiness and MDRC. <https://postsecondaryreadiness.org/wp-content/uploads/2020/10/multiple-measures-assessment-impact-findings.pdf>

<sup>17</sup> Maryland university system drops SAT/ACT admissions requirement. Kate Ryan. WTOP. June 22, 2022. <https://wtop.com/maryland/2022/06/maryland-university-system-drops-sat-act-admissions-requirement/>

updating their policies as a result of this new rule, however, it is now possible that some Maryland public universities will not require a SAT or ACT score for admission.

## CASE STUDIES

*The Blueprint* serves as a clarion call for state and local leaders to consider innovative approaches of the types of measures used to demonstrate that a student is college and career ready. A resounding finding is that the use of a standardized assessment is no longer the only gold standard for a student's ability to succeed in postsecondary environments.

### Case Study: Arkansas

In a case study conducted in Arkansas, The Fordham Institute found that CTE concentrators are 21 percentage points more likely to graduate from high school than otherwise identical students (with similar demographics, eighth grade test scores, and number of CTE courses taken) who do not concentrate. In the year after high school, concentrators are 0.9 percentage points more likely to be employed (with average quarterly wages that are \$45 higher), and 1.3 percentage points more likely to be enrolled in a two-year college, than similar non-concentrators.<sup>18</sup>

While college readiness continues to be a strong focus in preparing students for postsecondary life, career readiness at the end of K-12 education is key for the more than 57 percent of high school graduates who either do not enroll in postsecondary education or who work and attend college at the same time (United States Department of Labor, Bureau of Labor Statistics, 2021).<sup>19</sup> CTE Concentrator course completion is a well-researched alternative measure for demonstrating college readiness and especially career readiness.

### Case Study: Nebraska and South Dakota

Education leaders in Nebraska and South Dakota partnered with the Regional Educational Laboratory Central (REL) to examine postsecondary outcomes of CTE students and found that CTE concentrators were 7 percentage points more likely than non-CTE concentrators to graduate from high school on time and 10 percentage points more likely to enroll in any type of postsecondary education within two years of their expected high school graduation year. The study also found that CTE concentrators were 3 percentage points more likely than non-CTE concentrators to earn a postsecondary award, such as a professional certificate, diploma, or associate's or bachelor's degree, within five years of their expected high school graduation year. CTE concentrators were 4 percentage points more likely than non-CTE concentrators to obtain up to an associate's degree as their highest postsecondary award within five years of their expected high school graduation year but 1 percentage point less likely to obtain a bachelor's degree or higher.<sup>20</sup>

### Case Study: Chicago

As an alternative to relying solely on standardized assessments such as SAT and ACT as a measure of college and career readiness, another method uses a student's high school grade point average (GPA). A recent 2020 comprehensive study compared the use of ACT exam scores to using high school GPA as an effective predictor of a student's college completion. It found that high school grade point averages are five times more effective than ACT scores at predicting who will graduate from college. To offer perspective, this study looked at over 55,000 graduates from all Chicago public high schools across a three-year period.<sup>21</sup>

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<sup>18</sup> Dougherty, S. M. (2016). Career and Technical Education in High School: Does It Improve Student Outcomes?. *Thomas B. Fordham Institute*.

<sup>19</sup> Statistics, B. (2021). College Enrollment and work activity of 2020 high school Graduates. *Washington, DC: US Department of Labor*.

<sup>20</sup> Brodersen, R. M., Gagnon, D., Liu, J., & Tedeschi, S. (2021). The Impact of Career and Technical Education on Postsecondary Outcomes in Nebraska and South Dakota. REL 2021-087. *Regional Educational Laboratory Central*.

<sup>21</sup> Allensworth EM, Clark K. (2020). High School GPAs and ACT Scores as Predictors of College Completion: Examining Assumptions About Consistency Across High Schools. *Educational Researcher*. 49(3):198-211. doi:[10.3102/0013189X20902110](https://doi.org/10.3102/0013189X20902110).

Individual high schools within Chicago vary greatly in many achievement metrics, yet GPA remains a strong predictor of college enrollment and success. In fact, the study's lead researcher said that "While people often think the value of GPAs is inconsistent across high schools, and that standardized test scores, like the ACT, are neutral indicators of college readiness because they are taken by everyone under the same conditions, our findings indicate otherwise. The bottom line is that high school grades are powerful tools for gauging students' readiness for college, regardless of which high school a student attends, while ACT scores are not." The researchers argue that GPA may be a better indicator of college success because of the wide array of skills and behaviors that contribute to a student's GPA.<sup>22</sup>

A student's persistence and continued success across the varied inputs of different types of assignments, different contents, and different environments are more similar to the actual demands of college, rather than a single test in a sterile environment that can be prepared for over the course of years.<sup>23</sup> Recently, Harvard University had similar findings which led to their amending admission guidelines. Now, candidates can submit "whatever materials they believe would convey their accomplishments in secondary school and their promise for the future."<sup>24</sup>

Overall findings suggest that high school grade point averages perform in a strong and consistent way across high schools as measures of college readiness, whereas ACT scores do not.<sup>25</sup>

### Case Study: University of California

The University of California is one of many colleges and universities that has removed the ACT and SAT as an admission requirement. Advocacy groups, students, and school systems argued that college entrance tests are "biased against poor and mainly Black and Hispanic students" thus leading to discriminatory enrollment practices based on race, wealth, and disability. The SAT and ACT scores will be used in a limited way such as students who need the English subject matter requirement, course placement purposes, or for advising if students decide to use the scores.<sup>26</sup>

Research into predictors of college success for California high school students found that high school GPA is a stronger predictor of first-year college GPA and second-year persistence than either Smarter Balanced Assessment or SAT at California State University. Also, using high school GPA as a predictor of college success results in a much higher representation of low income and underrepresented minority students in the top of the University of California applicant pool, than do SAT or Smarter Balanced Assessment scores. Using high school GPA with Smarter Balanced Assessments versus high school GPA with SAT also results in a more socioeconomically and racial/ethnically diverse applicant pool.<sup>27</sup>

### Case Study: National Association for College Admission Counseling

The National Association for College Admission Counseling (NACAC) recently released a report citing needed changes from the results of a long-term study which describes potential inequities associated with standardized testing for college-bound students. In the 2020 report, there was a call for solutions focused on identifying barriers for students who needed accommodations; offering fee waivers for the ACT and SAT exams for students

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<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Anderson, N., (2021). Harvard Won't Require SAT or ACT Through 2026 as Test-Optional Push Grows. Washington Post. <https://www.washingtonpost.com/education/2021/12/16/harvard-test-optional-college-admissions/>

<sup>25</sup> Allensworth EM, Clark K. (2020). High School GPAs and ACT Scores as Predictors of College Completion: Examining Assumptions About Consistency Across High Schools. *Educational Researcher*. 49(3):198-211. doi:[10.3102/0013189X20902110](https://doi.org/10.3102/0013189X20902110).

<sup>26</sup> McDonnell, G., (2021). University of California Will No Longer Consider SAT and ACT Scores. New York Times. <https://www.nytimes.com/2021/05/15/us/SAT-scores-uc-university-of-california.html>

<sup>27</sup> Kurlaender, M., & Cohen, K. (2019, March). Predicting college success: How do different high school assessments measure up? [Report]. Policy Analysis for California Education. <https://edpolicyinca.org/publications/predicting-college-success-how-do-different-high-school-assessments-measure-2019>

who may need financial assistance; and more recently, recognizing the impact COVID-19 is having on college admission practices and policies. To that end, a task force was assembled by the NACAC, whose role it was to study the “cumulative effects on equity and access for international students and US students” taking online standardized tests used for college admissions.<sup>28</sup> The work of the task force is summarized in the report illuminating the Association’s greater goal: ensuring higher education creates environments in which all students, regardless of race, ethnicity, country of origin, or country of residence, are provided equal access to educational opportunity. Consequently, there were certain calls to action including how institutions should use standardized test scores. Historically, they were intended as a “common yardstick” or finding a “diamond in the rough” in their ability to assess the “cognitive characteristics” independent of the impact of a secondary curriculum.

Today, however, the report hastens colleges and universities to consider using high school grades as an important factor in admission decisions. Years of research now point to high school grades as the single strongest predictor of academic success during the first year of college and perhaps beyond. The report adds, though, that standardized test scores can be value-added when combined with high school grades for their predictive prowess.<sup>29</sup>

### Case Study: Everett Community College, Washington

Everett Community College, one of 34 community and technical colleges in Washington state, offers an innovative approach for prospective students trying to meet college admission requirements. Alternative options appear scenario-based and mirror much of the more recent research for college admission such as:

- A student who completed a math class at a Washington high school, within the last two years, and who earned a C+ or better, both semesters, enroll in a credit-bearing Math course.
- A student who graduated from a Washington high school, within the last five years with a 2.5 GPA or higher, can enroll in English 101.

### REVISIONS TO CCR STANDARD

*The Blueprint* specifies that each student should be supported to reach college and career readiness by the end of the 10<sup>th</sup> grade to be prepared for participation in Post-CCR pathways during 11<sup>th</sup> and 12<sup>th</sup> grades. The studies that MSDE are commissioning will determine whether GPA is a valid and reliable predictor of postsecondary success in Maryland. MSDE will also investigate the reliability of multiple measures for determining how students meet the CCR standard. Based on previous research, possible determinations might include cumulative 9<sup>th</sup> and 10<sup>th</sup> grade GPA, core subjects GPA, cumulative GPA including middle school courses, attainment of credits in core content courses, attainment of credits in career and technical education (CTE) courses, or a combination together with assessment scores, attendance, or other behavioral metrics. Although discussed earlier in this report, it is worth revisiting how high school grade point average has been shown to be a stronger predictor of performance in college-level English and math, than standardized test scores, among first time students enrolled in college-level courses.<sup>30</sup>

Based on the outcomes of the commissioned research studies and other research, GPA and course completion should be considered, at a minimum, as additional ways for students to meet an updated CCR standard.

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<sup>28</sup> Latting, J., (2020). Ensuring All Students Have Access to Higher Education: The Role of Standardized Testing in the Time of COVID-19 and Beyond. National Association for College Admission Counseling. [https://www.nacacnet.org/globalassets/documents/knowledge-center/nacac\\_testingtaskforcereport.pdf](https://www.nacacnet.org/globalassets/documents/knowledge-center/nacac_testingtaskforcereport.pdf).

<sup>29</sup> Latting, J., (2020). Ensuring All Students Have Access to Higher Education: The Role of Standardized Testing in the Time of COVID-19 and Beyond. National Association for College Admission Counseling. [https://www.nacacnet.org/globalassets/documents/knowledge-center/nacac\\_testingtaskforcereport.pdf](https://www.nacacnet.org/globalassets/documents/knowledge-center/nacac_testingtaskforcereport.pdf).

<sup>30</sup> Hodara, M., & Lewis, K. (2017). How well does high school grade point average predict college performance by student urbanicity and timing of college entry? (REL 2017–250). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. Retrieved from [https://ies.ed.gov/ncee/rel/regions/northwest/pdf/REL\\_2017250.pdf](https://ies.ed.gov/ncee/rel/regions/northwest/pdf/REL_2017250.pdf)

Additionally, MSDE will continue to investigate how various measures of college and career readiness, including using GPA and course completion, may be used to identify when each student met the CCR standard.

Once the commissioned research studies have been completed, MSDE will define and provide guidance and recommendations for what skills and knowledge students need to succeed in college and a career. As part of the draft process, MSDE will propose needed changes to the CCR standard with a variety of options for measurement. MSDE will bring the revised CCR standard to the State Board of Education for approval. Additionally, the outcome of the research studies may require revisions to the comprehensive assessment program, its related content standards, administration methods, or options for students to display mastery through alternative methods.

## Section 2: Curriculum Alignment and Changes

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Following the adoption of a revised CCR Standard, all coursework and instructional programming leading up to 10th grade must be examined for alignment and coherence. An instructional system that is seamlessly aligned between the standard, instructional programs, assessments, and evidence-based supports will enable students to be prepared at each level of their academic journey.

*The Blueprint for Maryland's Future* sets the expectation that students meet the College and Career Readiness standard by the end of their 10<sup>th</sup> grade year. This could represent a major shift and change in how state and local education agencies sequence courses and programs to ensure students meet the CCR standard in 10<sup>th</sup> grade, such that courses, normally taught in 11<sup>th</sup> or 12<sup>th</sup> grade may be shifted to earlier grade levels. The research studies mentioned earlier may indicate that the current content standards and curricula in place in Maryland schools are not aligned or sufficient for a student to succeed in their first year of higher education. If this is the case, revision to current instructional practices and programming must be examined to ensure that all students are supported in their progression to meeting the CCR standard. Using the outcome of the empirical research studies described in Section 1 with the input of vital stakeholder groups, MSDE will draft plans for how curricula at each grade level or course by content area will need to be revised. Some potential course sequences, revisions, and additional opportunities for improvement are discussed below by each content area. These options are all preliminary and may change based on stakeholder feedback and engagement.

MSDE is also investigating its processes for approving and recommending high-quality instructional materials for use in classrooms. Aligned curricula and evidence-based classroom materials are crucial components to ensuring students' continued progress and success each year of their educational career.

### HIGH-QUALITY INSTRUCTIONAL MATERIALS

To support all of Maryland's educators and to ensure all Maryland students have access to the highest-quality instruction that is aligned towards the curriculum that will ensure that students are college and career ready, MSDE is investigating its process to review and approve high-quality instructional materials (HQIM) for courses across all K-12 grade levels. The Blueprint of Maryland's Future requires that MSDE develops "curriculum standards and curriculum resources for each subject at each grade level, which build on one another in logical sequence, in core subjects that may be used by local school systems and public-school teachers."<sup>31</sup> However, in order to develop a model statewide curriculum, Maryland must first have a system to identify high quality instructional materials (HQIM) and tools that outline the elements of outstanding curricula in the core subjects of English, mathematics, science, and social studies.

To deliver the world-class education that the Blueprint envisions, Maryland educators need to rely on high-quality materials that are designed to provide students with the rigorous instruction that is needed. Unfortunately, teachers frequently create or "find" curricular materials rather than implementing high quality materials. Though it is possible some of these products are high quality, it is more likely that they lack coherence and require inordinate time and energy expenditures that could be better dedicated to the process of instruction.<sup>32</sup>

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<sup>31</sup> MD Code, Education, § 7-202.1

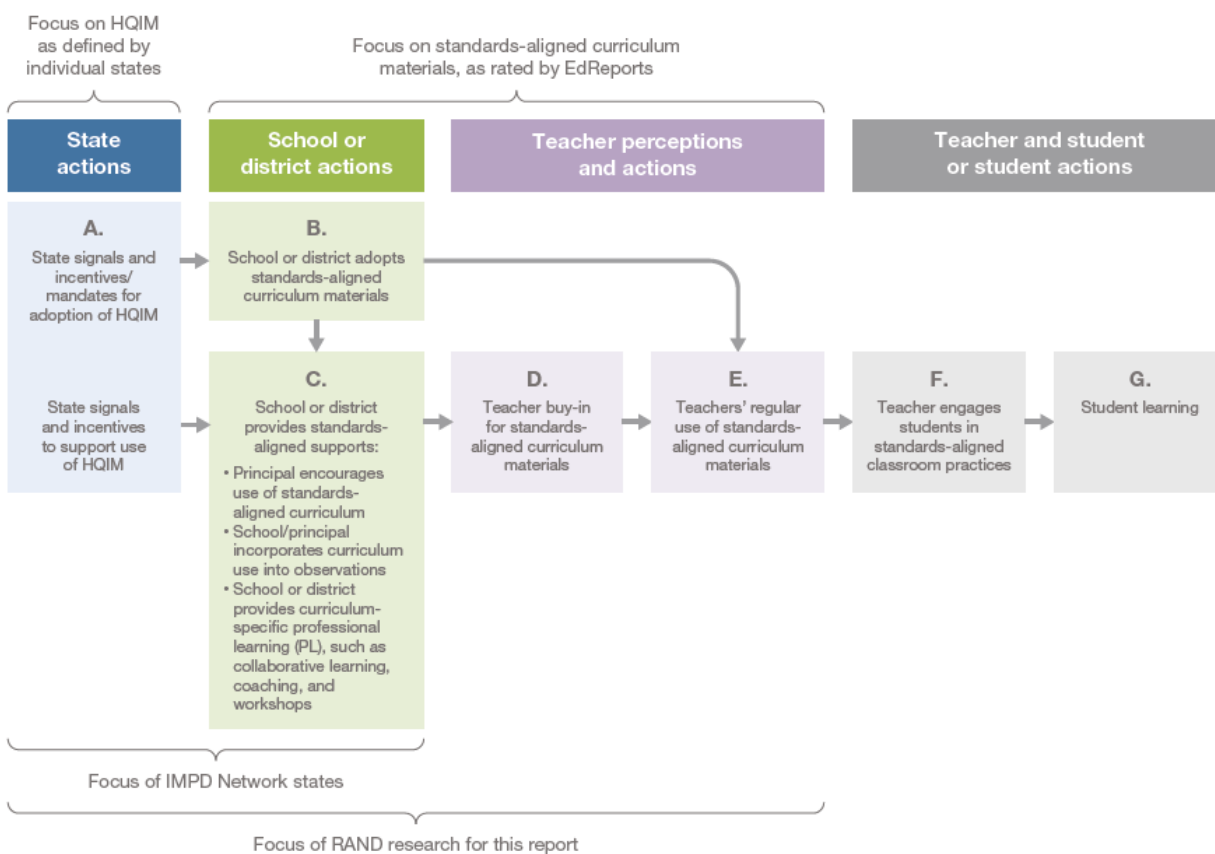
<sup>32</sup> Doan, Sy, Julia H. Kaufman, Ashley Woo, Andrea Prado Tuma, Melissa Kay Diliberti, and Sabrina Lee, How States Are Creating Conditions for Use of High-Quality Instructional Materials in K-12 Classrooms: Findings from the 2021 American Instructional Resources Survey. Santa Monica, CA: RAND Corporation, 2022. [https://www.rand.org/pubs/research\\_reports/RRA134-13.html](https://www.rand.org/pubs/research_reports/RRA134-13.html).



The Council of Chief State School Officers (CCSSO) has developed and operates a High-Quality Instructional Materials and Professional Development (IMPD) Network of 13 states to support the member states with adopting and implementing policies and strategies that support the use of HQIM. The states included in the IMPD Network have demonstrated strong results for implementing HQIM policies and ultimately for improving student achievement. Massachusetts notes that the expanded access to high quality, standards aligned materials can “significantly improve student outcomes, especially when teachers have the professional learning opportunities they need to make the most of those materials.”<sup>33</sup> A recent comprehensive study into the IMPD Network and the use of instructional materials in member states has found a number of strategies that promote the adoption and use of standards-aligned curriculum materials, outlined in the Theory of Action displayed in Figure 18. Through a thoughtful and integrated set of signals and incentives to adopt and use HQIM, teachers will have the materials necessary to increase student learning.<sup>34</sup>

Building on the evidence and lessons learned from states in the IMPD Network and others who have developed strong HQIM processes, MSDE is in the process of taking a close look at its current practices and assessing whether changes should be made. MSDE is also considering joining the IMPD Network, with the support of CCSSO.

**Figure 18: HQIM Theory of Action**



<sup>33</sup> Curriculum Matters: Instructional Materials and Professional Development. Massachusetts Department of Elementary and Secondary Education. <https://www.doe.mass.edu/instruction/impd/>

<sup>34</sup> Doan, Sy, Julia H. Kaufman, Ashley Woo, Andrea Prado Tuma, Melissa Kay Diliberti, and Sabrina Lee, How States Are Creating Conditions for Use of High-Quality Instructional Materials in K–12 Classrooms: Findings from the 2021 American Instructional Resources Survey. Santa Monica, CA: RAND Corporation, 2022. [https://www.rand.org/pubs/research\\_reports/RRA134-13.html](https://www.rand.org/pubs/research_reports/RRA134-13.html).



## MATHEMATICS CURRICULUM

The content with the largest potential for change is mathematics. Under current COMAR for Enrollment and Credit Requirements,<sup>35</sup> to receive a Maryland diploma, a 9th grade student entering the Maryland education system in the 2021-22 school year must earn four mathematics credits, which must include a credit in algebra and a credit in geometry. These students would follow the traditional Algebra 1 (grade 9)—Geometry (grade 10)—Algebra II (grade 11) model; however, this sequence may not provide students with the knowledge, skills, and understandings needed to demonstrate readiness for college and career in the time indicated in The Blueprint. Consequently, students who were not able to demonstrate a certain score or performance level on the state assessment might be required by a community college or university to take remedial mathematics courses before enrolling in credit-bearing college courses. An investigation of the mathematics content in various college placement tests reveals that those tests typically include many more questions of algebra-related topics and fewer questions on geometry-related topics, which calls into question whether traditional high school mathematics requirements and course sequences work effectively in today's education landscape.

In fact, a growing number of national organizations are calling for states to rethink the high school mathematics sequence. In the National Council of Teachers of Mathematics (NCTM) publication "Catalyzing Change in High School Mathematics" (2018), an argument is presented on blending geometry content and statistics into the mathematics required for high school graduation.<sup>36</sup> This approach would equip students with the skills needed to understand the vast amount of data they will encounter in the future. Additional research from the National Center on Education and the Economy (2013)<sup>37</sup> and others (Charles A. Dana Center, 2020)<sup>38</sup> finds that a student is better prepared to succeed in college math courses when a strong understanding of the concepts in Algebra I are combined with some statistics and some geometry topics. Any higher-level courses, including a full year of geometry and Algebra II, are not necessary for postsecondary success. Based on these research findings, Maryland students might be better served and better prepared for college if the geometry graduation requirements were changed to a geometry/statistics blend requirement. As an example, see Mathematics Progression Option 1 (Table 1), among other suggested course sequence change options as modeled in Tables 2 and 3. These shifts in course sequence for mathematics could require the development of a new course framework in the context of larger systemic changes to the math progressions and potentially other policy changes.

### Key considerations that may impact the decision-making process related to the CCR Mathematics Pathways include:

- The University System of Maryland admission policy requires 4-credits of mathematics taken while in high school, including Algebra I, Geometry, and Algebra II. Students who complete Algebra II prior to their final year must complete the four-year mathematics requirement by taking a course or courses that are more advanced than Algebra II. The current University of Maryland admission policy (2017) will be reevaluated in spring 2022, and any changes to this policy could impact the mathematics pathways for high school students. The results of MSDE engagement and research may also provide an opportunity to collaborate between MSDE and USM to collectively determine the ideal requirements for students.
- Maryland colleges offer several options for the first credit-bearing, college-level mathematics course. Options include College Algebra, Statistics, and Quantitative Literacy. The placement test cut score required for students to be eligible to take College Algebra is higher than the cut scores needed for taking Statistics or Quantitative Literacy. If Maryland's CCR standard indicates that students can take

<sup>35</sup> COMAR 13A.03.02.03. <http://www.dsd.state.md.us/comar/comarhtml/13a/13a.03.02.03.htm>

<sup>36</sup> National Council of Teachers of Mathematics. (2018). Catalyzing Change in High School Mathematics: Initiating Critical Conversations.

<sup>37</sup> National Center on Education and the Economy (NCEE). (2013). What Does It Really Mean to be College and Work Ready? The Mathematics and English Literacy Required of First Year Community College Students.

<sup>38</sup> Launch years: A new vision for the transition from high school to postsecondary mathematics (2020). Charles A. Dana Center.

any credit-bearing college-level mathematics course at a local community college, the cut score set will need to reflect this.

- Geometry can be taken anywhere in the high school mathematics sequence after Grade 8. Students have the option of taking Geometry concurrently with other high school mathematics courses.

## MATHEMATICS PROGRESSION OPTIONS

Below are possible mathematics course progressions that are examples of course sequences leading toward a CCR designation by the end of 10<sup>th</sup> grade, or by graduation. Each sequence proposes a model beginning in 7<sup>th</sup> grade.

### Mathematics Progression Option 1:

For school year 2021-2022, entering 9<sup>th</sup> grade students are required to earn four credits of math, which includes earning credit in Algebra I and Geometry; however, the traditional course sequence may not adequately prepare students for the new standard of being college and career ready by the end of 10<sup>th</sup> grade. Therefore, one possible revised course sequence under Mathematics Progression Option 1 (Table 1), would be to incorporate a newly developed course which blends statistics and geometry, as a course offering by the time a student reaches grade 10. This model follows other innovative models across the nation in which a re-evaluation of the role geometry plays in a typical high school mathematics course sequence<sup>39</sup> appears to be changing. Offering a more complex sequence of courses could pose challenges for some students. Under *The Blueprint*, a requirement is to provide enrollment options via an extended curriculum with an emphasis on project-based and problem-based applied learning and varied instructional timing. Students who are “Not on Target to Meet the CCR Standard” take the same mathematics courses as students who “Are on Target to Meet CCR” through grade 10; but LEAs are required to provide an extended curriculum as described above to support such students.

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<sup>39</sup> Should High Schools Rethinks How They Sequence Math Courses? Education Week. November 2019. <https://www.edweek.org/teaching-learning/should-high-schools-rethink-how-they-sequence-math-courses/2019/11>

**Table 1: Mathematics Course Sequence Option 1**- Requires revisions to COMAR, changing the current Geometry course to a blended delivery of a Geometry/Statistics course.

Sequences	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<b>Not on Target to Meet the CCR Standard</b>	Math 7	Math 8	Algebra I	Geometry/ Statistics	Possible Course Selections: College Algebra Data Science Statistics Topics for Mathematical Literacy	Possible Course Selections: College Algebra Data Science Statistics Topics for Mathematical Literacy
<b>On Target to Meet the CCR Standard</b>	Math 7	Math 8	Algebra I	Geometry/ Statistics	Possible Course Selections: Algebra II College Algebra Data Science Statistics	Possible Course Selections: College Algebra Precalculus Data Science Statistics
<b>Accelerated</b>	½ Math 7 and Grade 8	Algebra I	Geometry/ Statistics	One of: Algebra II College Algebra Data Science Statistics	Possible Course Selections: Precalculus Data Science Statistics Computer Science	Possible Course Selections: Calculus Data Science Statistics Computer Science

**Mathematics Progression Option 2:**

As an alternative course sequence, Table 2 illustrates how a course sequence could change to reflect a possible outcome of the rigorous studies being conducted by external parties under *Blueprint*. If it is determined that the current Algebra I coursework does not adequately prepare students to be college and career ready by the end of the 10<sup>th</sup> grade, this course sequence would necessitate a change in COMAR to require students to earn a credit in Algebra II, by the end of 10<sup>th</sup> grade.

**Table 2: Mathematics Course Sequence Option 2-** If it is determined that a student needs Algebra II for CCR, these sequences show a model that would prepare students to be CCR by the end of 10<sup>th</sup> grade.

Sequences	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
<b>Not on Target to Meet the CCR Standard</b>	Math 7	Math 8	Algebra I	Algebra II	Possible Course Selections: College Algebra Data Science Geometry/Statistics Blend Topics for Mathematical Literacy	Possible Course Selections: College Algebra Data Science Statistics Topics for Mathematical Literacy
<b>On Target to Meet the CCR Standard</b>	Math 7	Math 8	Algebra I	Algebra II <i>(option to take Geometry concurrently with Algebra II)</i>	Possible Course Selections: Geometry Precalculus Data Science Statistics	Possible Course Selections: Calculus Data Science Statistics
<b>Accelerated</b>	½ Math 7 and Grade 8	Algebra I	Geometry	Algebra II	Possible Course Selections: Precalculus Data Science Statistics Computer Science	Possible Course Selections: Calculus Data Science Statistics Computer Science

### Mathematics Progression Option 3: Same Math Sequence for All Students through 10th grade

A few states and school systems have recently opted to rework the math course progression with a focus on equity; all students enter the same main pathway of math courses at the same point as shown in Table 3. Proponents of this approach explain that it promotes equity across student groups because it offers the same coursework with needed supports and opportunities to accelerate student learning. As an example, the Brookings Institute recently reported that the 2021 California Mathematics Framework has been structured so that all students take “common, heterogeneously grouped math classes through 10<sup>th</sup> grade” so that no student be allowed to accelerate until the 11<sup>th</sup> grade. This is based on the belief that a lack of “tracking or acceleration” would enable all students to regard math courses as a subject for which they can be successful and to which they belong.<sup>40</sup>

**Table 3: Mathematics Course Sequence Option 3:** This option would require the mathematics courses required for graduation to include Algebra II. This option does not allow students to take Algebra I in middle school. Students could still get to Calculus in high school by taking two mathematics courses in one year. This option does not include an accelerated sequence.

Sequences	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Not on Target to Meet the CCR Standard	Math 7	Math 8	Algebra I	Algebra II	Possible Course Selections: College Algebra Data Science Statistics Topics for Mathematical Literacy	Possible Course Selections: College Algebra Data Science Statistics Topics for Mathematical Literacy
On Target to Meet the CCR Standard	Math 7	Math 8	Algebra I	Algebra II  <i>(option to take Geometry concurrently with Algebra II)</i>	Possible Course Selections: Geometry Precalculus Data Science Statistics	Possible Course Selections: Calculus Data Science Statistics

<sup>40</sup> Loveless, T. (2019). Does Tracking Promote Educational Equity? Brookings Institute. October 4, 2021. <https://www.brookings.edu/blog/brown-center-chalkboard/2021/10/04/does-detracking-promote-educational-equity/>

### CASE STUDIES

MSDE examined case studies from other states and districts to inform the development of the possible math pathways. These include Virginia, Oregon, Utah, and San Francisco.

#### Case Study: Virginia

Virginia recently proposed an integrated math pathway that promotes equity, while allowing for individual acceleration for each student. This approach accelerates the learning of all students by holding the curriculum standards constant for all students and ensuring that even the lowest performing students meet those standards. Accelerated students continue to benefit from advanced offerings while deepening understanding of essential concepts. An overview of Virginia's proposed math progressions is provided in Figure 19.

Figure 19

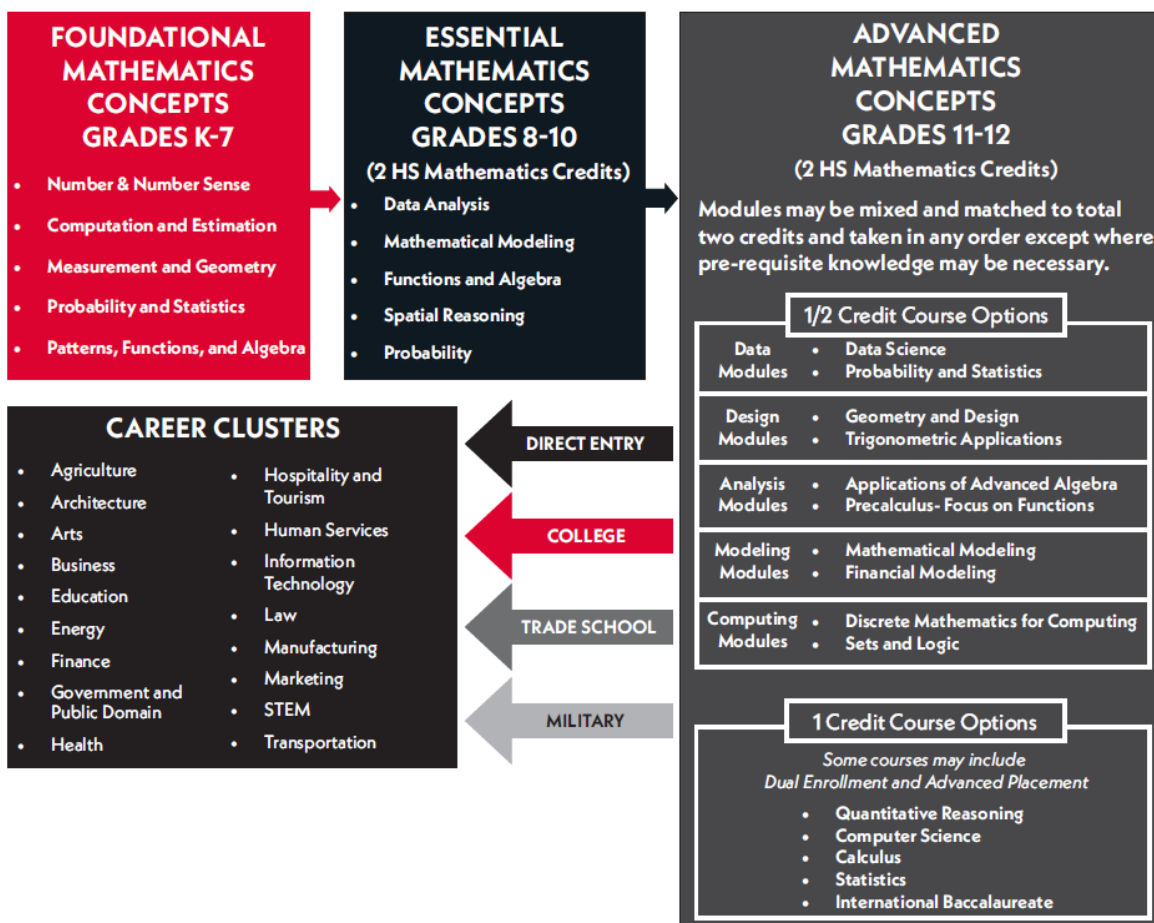


Figure 19. Shows the Virginia state education model, based on the state's conceptual rendering for offering a math sequence that is equitable to all students. Of note, this model begins with the foundational math standards as early as kindergarten and requires 4 credits of mathematics to graduate high school, much like Maryland's model.

### Case Study: Oregon

As recently as 2021, Oregon has been working on overhauling their mathematics standards and high school math course progressions. The overhaul<sup>41</sup> comes after a shifting of mindset from adults placing students in classes to schools engaging students in course selection and offerings that fit a student's career and college goals.<sup>42</sup> Figure 20 shows a visual representation of the sequence to three distinct pathways, leading Oregon students to college and career. Of note, Oregon's state model shows just three credits in mathematics and does not include a STEM or CTE-based pathway, unlike proposed Maryland models.

Figure 20

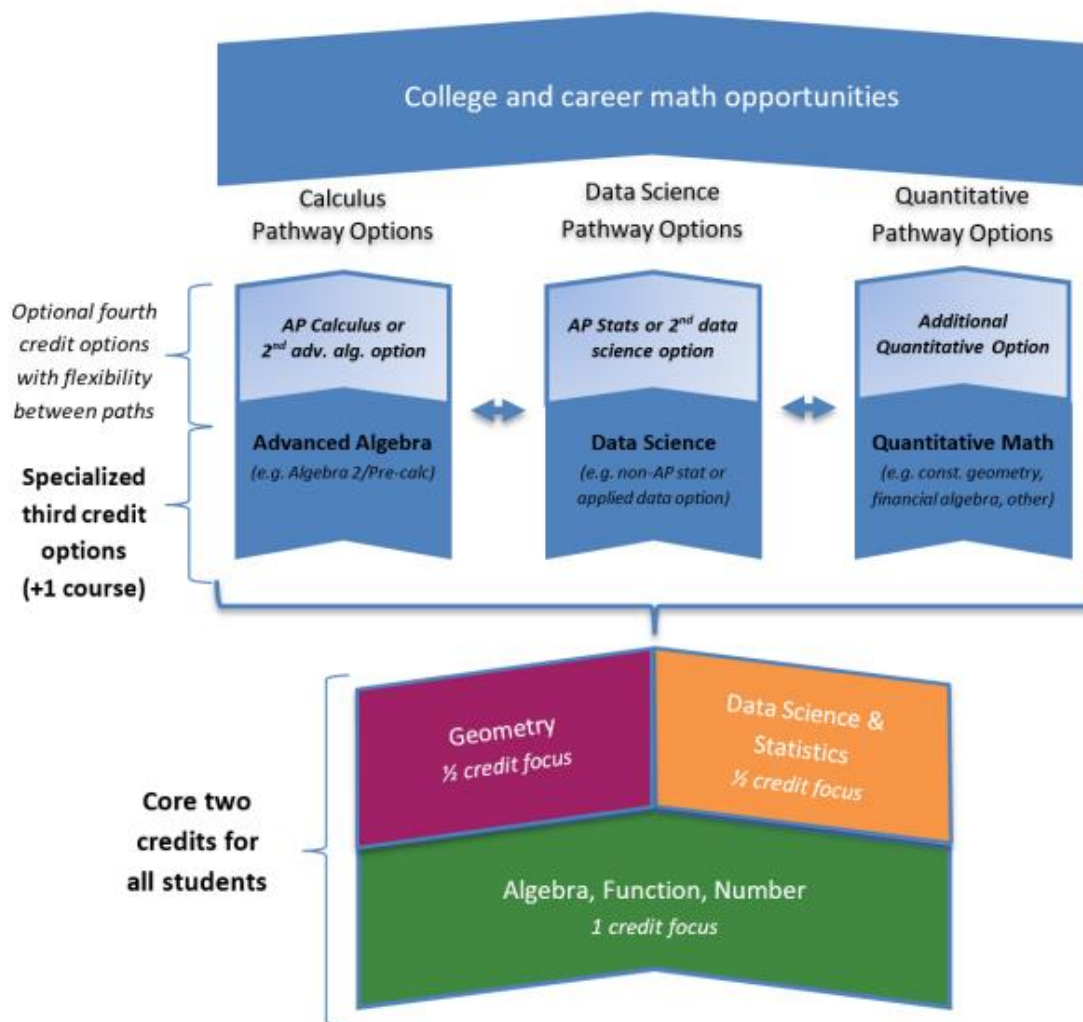


Figure 20. Adapted from Oregon Math Standards Review & Revision (Version 3.3.0): January 2021 PUBLIC REVIEW DRAFT – High School Draft Mathematics Standards (Oregon Department of Education, January 29, 2021). Shows an example of what Mathematics Progression Option 3 could look like if Maryland changes from Geometry to a Geometry/Statistics blend. (n.b.- Oregon Department of Education only requires three credits of mathematics and does not have a CCR option.)

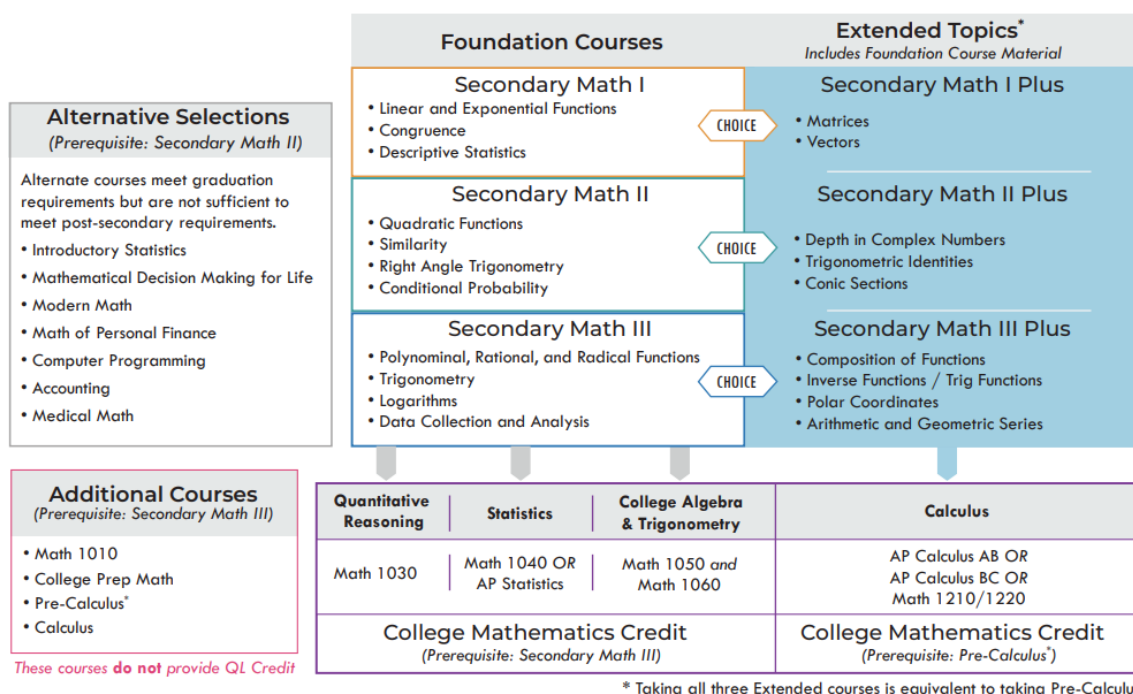
<sup>41</sup> Oregon Math Standards Review and Revision, January 2021. [https://www.oregon.gov/ode/educator-resources/standards/mathematics/Documents/Draft%20Math%20Standards/21\\_High%20School\\_Draft%20v3.3\\_Introduction.pdf](https://www.oregon.gov/ode/educator-resources/standards/mathematics/Documents/Draft%20Math%20Standards/21_High%20School_Draft%20v3.3_Introduction.pdf)

<sup>42</sup> Gewertz, C., (2019). Should High Schools Rethink How They Sequence Math Courses? Edweek, November 13, 2021. <https://www.edweek.org/teaching-learning/should-high-schools-rethink-how-they-sequence-math-courses/2019/11>

### Case Study: Utah

The Utah High School Mathematics Graduation Pathways shows the different progressions available to high school students as they register for classes. It provides students several pathways for meeting a Quantitative Literacy (QL) requirement in college while potentially satisfying the requirement in high school.<sup>43</sup> This model also allows for some students to take extended topics concurrently with the foundation courses, for those students who excel in a more accelerated environment.

Figure 21



Utah State Board of Education, 2021

Which Math Course is Right for you? [bit.ly/UT-Math](https://bit.ly/UT-Math)

USBE ADA Compliant March 2021

Figure 21. Shows Utah's high school math course progressions for preparing students for college level coursework. n.b. QL means quantitative literacy, Utah's predictor for college success upon meeting general education math requirements by the end of the first year of college.<sup>44</sup>

### Case Study: San Francisco

With the adoption of the Common Core State Standards in 2013, the San Francisco Unified School District and County Office of Education policy, based on the Mathematics Placement Act of 2015 (SB 359, Ca.) requires a “fair, objective, and transparent mathematics policy for pupils entering grade 9”<sup>45</sup> that considers:

- Systematic and multiple objective academic measures of student performance
- Measures include statewide assessments, placement tests, classroom assignments, grades, and report cards.
- At least one checkpoint within the first month of school to ensure accurate placement.

<sup>43</sup> Utah State Board of Education (2021). Utah High School Mathematics Graduation Pathways. <https://www.schools.utah.gov/file/08a2d9be-d56d-4109-a1b7-0c88092eda38>

<sup>44</sup> Utah System of Higher Education (2015). Math and Graduation: High School Math & First Year of College Critical to Completion. <https://ushe.edu/high-school-math-critical-to-completion/>

<sup>45</sup> San Francisco Unified School District and County Office of Education Board Policy 6152.1 Math Placement Policy. <https://go.boarddocs.com/ca/sfusd/Board.nsf/goto?open&id=B94834042051>



The school system was charged to develop a new math sequence with broader access to grade-level mathematics courses so that all students in the district take Common Core-aligned mathematics courses in grades 6-10 and have multiple pathways for taking advanced math courses such as AP Statistics and AP Calculus, as shown in Figure 19. According to the school district's website, more students began accessing courses beyond Algebra 2, as demonstrated by increased enrollment, which, in turn, increased enrollment in AP course offerings. Additionally, the district saw the percentage of African American and Latino students increasing in coursework beyond Algebra 2 from 11% and 14% in 2016-2017 to 14% and 16% by 2019-2020 school year<sup>46</sup>, respectively.

Figure 22

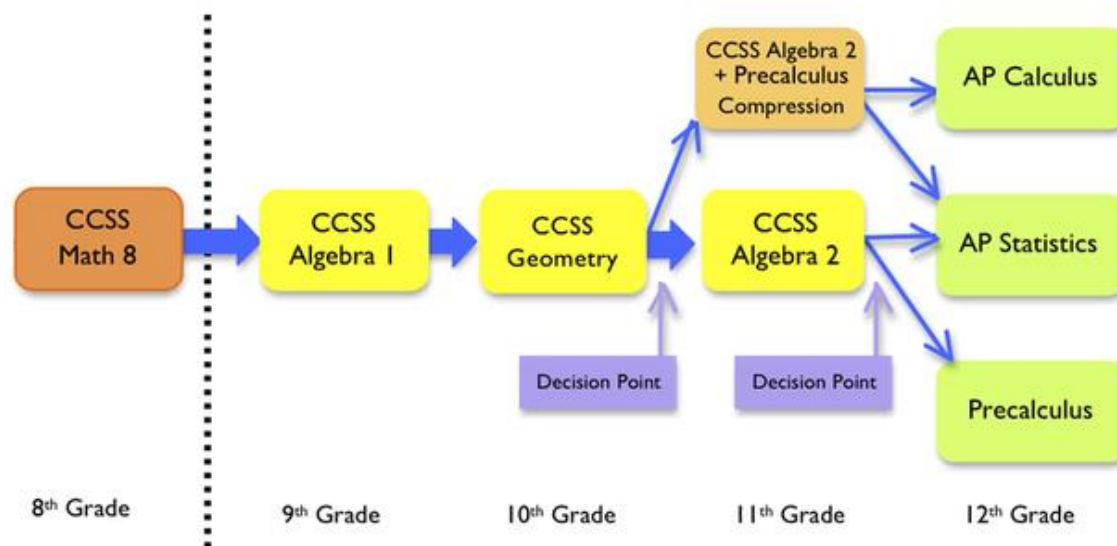


Figure 22. Shows the San Francisco Unified School District's course sequence for mathematics, beginning in grade 8. The CCSS Math 8 is designed to prepare students for success in high school math courses. This model is worth comparing to other models and to proposed Maryland models in terms of its eligibility and application process.<sup>47</sup>

## ENGLISH LANGUAGE ARTS

Current Maryland regulation<sup>48</sup> stipulates that each local education agency shall provide an instructional program in English language arts/literacy each year for all PreK-8 students and an English language arts/literacy program for grades 9-12 which enables students to meet graduation requirements. Importantly, the regulation sets the expectation that all curricula, text, and curriculum documents be aligned with the Maryland College and Career Ready Standards for English language arts/literacy.

Another key regulation in Maryland is the recently adopted Ready to Read Act.<sup>49</sup> The Code of Maryland Regulations (COMAR) requires that local education agencies ensure that all students enrolled in public kindergarten are screened to identify if the student is at risk for reading difficulties and provide supplemental reading instruction aligned to the results of the screener. Students in first, second and third grade shall also be included in the screening and supplemental reading instruction if they were not previously screened, demonstrated difficulty mastering grade level reading in the previous grade, or transferred to a public elementary school. If the screening results indicate that a student is at risk for reading difficulties, the local education agency shall notify the parent or guardian in writing of the student's screening results and a description of the

<sup>46</sup> Matthews, V., (2021). How Changing Math Programming Increases Access to College and Career Ready Courses. EdSource, December 9, 2021. <https://edsources.org/2021/how-changing-math-programming-increases-access-to-college-and-career-ready-courses/664505>

<sup>47</sup> San Francisco Unified School District (n.d.) 9th Grade Math Placement & Math Validation Test Information. <https://www.sfusd.edu/mvt>

<sup>48</sup> COMAR 13A.04.14.01. <http://www.dsd.state.md.us/comar/comarhtml/13a/13a.04.14.01.htm>

<sup>49</sup> COMAR 13A.03.08. [http://www.dsd.state.md.us/COMAR/SubtitleSearch.aspx?search=13A.03.08.\\*](http://www.dsd.state.md.us/COMAR/SubtitleSearch.aspx?search=13A.03.08.*)

supplemental reading instruction that shall be provided. It is expected that the supplemental instruction takes place within the school day, is data-informed, and is aligned with the student's specific areas of deficit. The local education agency shall also set an individualized review schedule of the supplemental instruction for each student at intervals of not more than 30 days for progress monitoring. Information about the law, the screening process, progress monitoring, and reporting requirements can be found on the Maryland Public Schools website.<sup>50</sup>

While COMAR and *The Blueprint* do not address the capacity of existing teachers to deliver instruction in structured literacy, which is applying the science of reading in the classroom, MSDE is aware of the need to provide continuous professional learning and support. The implementation of structured literacy across the state and subsequent evidence of its impact on student achievement would require a multi-year approach that includes training teachers, administrators, and staff members, and then providing on-going job-embedded coaching and support to improve literacy rates through grade 12.

Meeting *Blueprint* expectations and preparing for potential changes in COMAR beginning with Maryland's youngest children to grade 12 are inarguably heavy lifts. Therefore, changes to existing Maryland policy and regulation may be needed based on the outcome of external research studies. Such changes may require the adoption of a new CCR standard, thus initiating the development of new PreK-12 content standards, coursework, and course sequencing options. MSDE is prepared to revise, replace, or realign standards within each of the English language arts/literacy strands (Reading Foundational, Reading Literature, Reading Informational Text, Language, Writing, and Speaking and Listening standards) as needed. MSDE has also investigated leading research on literacy along with case studies to inform policy and provide guidance to local education agencies.

### The Science of Reading

Increasingly, state agencies and school systems are prioritizing the use of evidence-based early literacy programs and instruction using findings from large, established studies grounded in psychology, human development, and cognitive science on how people read. A key finding is that high-quality instructional programs and curricula must be an integration of reading foundational skills (phonological and phonemic awareness) and meaning-making and comprehension-focused skills. Educator surveys suggest there is an understanding of this integrated approach to literacy for young readers, yet state and national reading data show persistently low achievement in reading.<sup>51</sup> Many districts across the nation are spending time and money on early literacy through the science of reading to close the opportunity gaps that were exasperated by the Covid pandemic.

Maryland's Ready to Read Act is a good place to start for young readers, but more needs to be done. First, non-negotiables for early reading instruction must be established with clear guidance for every PreK-3 teacher. These non-negotiables should include at a minimum:

- Explicit and precise instruction on every strand of literacy- alphabets, phonemic awareness, phonics, vocabulary, fluency, language usage, and comprehension
- Instruction with clear modeling, independent practice, and immediate feedback by educators
- Data-informed decision-making structures in place so that educators know how to adjust instruction such that a sufficient phonics instruction would elicit evidence that at least 80 percent of all students, including special education students, can read simple text independently at the end of first grade and more complex texts with understanding by the end of third grade

<sup>50</sup> Students with Reading Difficulties. MSDE. <https://marylandpublicschools.org/programs/Pages/ELA/ReadingDifficulties.aspx>

<sup>51</sup> Gabriel, R., (2021). *The Sciences of Reading Instruction*. Educational Leadership. Vol. 78 no.8.

- School-based structures that incorporate a cycle of continuous improvement where a plan-do-study-act or a Multi-Tiered System of Support (MTSS) model enables educators to implement a short-term intervention of about 3-4 months for students who demonstrated a need for additional support.<sup>52</sup>
- Teachers trained in structured literacy, age-appropriate pedagogy, and culturally responsive teaching
- A knowledge building curriculum aligned to the Maryland College and Career Readiness Standards

## SCIENCE OF READING CASE STUDIES

The science of reading has grounded many state literacy plans, as mentioned above. A few state examples of early literacy models are included below.

### Delaware

Delaware's Prekindergarten-Grade 3 Literacy Plan resulted in serious concerns over student group decreases in reading proficiency rates. The plan outlines four strategic intents aligned with key activities by teachers, leaders, and stakeholder partners: Align core instruction to the standards; implement curriculum using high-quality instructional materials; enhance early literacy instruction; and support educators through institutes of higher education.<sup>53</sup>

### Mississippi

The Literacy Based Promotion Act was originally intended to identify K-3 students who need additional help in reading as early as possible and to provide effective instruction and intervention to ensure they read on grade level by the end of third grade. In 2016, the law was amended to include individual reading plans for students identified with a reading deficiency, and a higher cut score was established for third-grade promotion. Additionally, SB2572 was enacted, requiring teacher candidates to pass a foundational reading test for certification to ensure they have the knowledge and skill to teach all students to read. The law includes:<sup>54</sup>

- Statewide training to support teachers with scientifically-based reading instruction and intervention.
- Reading coaches to provide job-embedded training and support for teachers.
- Early identification of K-3 students who have a reading deficiency.
- Parent notification and regular communication with parents of students identified with a reading deficiency.
- Individual reading plans, created in collaboration with the parent, prescribing the immediate specialized instruction and supports that will be provided to the student identified with a reading deficiency.
- Retention for third graders who do not meet the cut score for promotion.
- Good cause exemptions from retention to recognize the needs of some students.
- Specific intervention services for retained third-grade students, including resources to support parents with literacy activities at home.

As a result of these policies, Mississippi students have risen faster than anyone since 2013, particularly for fourth graders. In fourth grade reading results on the National Assessment of Educational Progress (NAEP), Mississippi boosted its ranking from forty-ninth in 2013 to twenty-ninth in 2019; in math, they zoomed from fiftieth to

<sup>52</sup> IRIS Center at Peabody College of Education, Vanderbilt University. (2021). Components of RTI and Components that Comprise High-Quality Reading Instruction. <https://iris.peabody.vanderbilt.edu/module/rti03/cresource/q1/p01/#content>

<sup>53</sup> Literacy Plan for Prekindergarten-Grade 3. Delaware Department of Education. [https://www.doe.k12.de.us/cms/lib/DE01922744/Centricity/Domain/167/literacy-5c-20s\\_6\\_24\\_19\\_final.pdf](https://www.doe.k12.de.us/cms/lib/DE01922744/Centricity/Domain/167/literacy-5c-20s_6_24_19_final.pdf)

<sup>54</sup> Mississippi's Literacy-Based Promotion Act: An Inside Look. ExcelinEd. <https://www.excelined.org/wp-content/uploads/2019/03/ExcelinEd.MSGatewaytoSuccess.March2019.pdf>

twenty-third. Adjusted for demographics, Mississippi now ranks near the top in fourth grade reading and math according to the Urban Institute.<sup>55</sup>

### North Carolina

The Excellent Public Schools Act of 2021 modifies the implementation of read-to-achieve programs, including changes to reading instruction in North Carolina public elementary school classrooms, with the aim of improving literacy levels by the time students reach the third grade. Notably, the law transitions reading instruction away from a 'look and say' method to adopt a 'Science of Reading' approach based on phonetic practices of comprehension and establishes an Early Literacy Program in the N.C. Department of Public Instruction to provide teacher training and support. The law requires all early education teachers, future educators, and professors in teacher preparation programs to be trained in reading instruction grounded in the science of reading. The training will take between 138 and 168 hours over the span of two years.<sup>56</sup> Additionally, Educator Preparation Programs seeking approval or renewal from the state after July 2022 will need to provide coursework in the science of reading for all teacher candidates.<sup>57</sup>

### Colorado

The Colorado Reading to Ensure Academic Development Act (READ Act), passed by the Colorado legislature in 2012, focuses on early literacy development for all students and especially for students at risk to not read at grade level by the end of the third grade. The READ Act focuses on literacy development for kindergarteners through third graders. Students are tested for reading skills, and those who are not reading at grade level are given individual READ plans. In 2019, the legislature made several changes to the READ Act to help educators support reading success among the state's youngest learners. Not all of Colorado's educators have had the opportunity to learn the science of teaching reading in their teacher training programs, so one of the changes to the READ Act will require training on the latest evidence-based reading instruction strategies for all K-3 teachers. This is a one-time requirement for teachers. Districts that do not meet the requirements will be ineligible for READ Act funds for the 2022-23 school year. Each year going forward, districts will need to make sure teachers new to K-3 have met this requirement. The training must:<sup>58</sup>

- Consist of a minimum of 45 hours
- Address the content of the educator preparation literacy standards
- Include an end-of-course assessment that teachers can provide evidence of passing

### Content-Rich Instruction

Developing students' reading comprehension is a complex task that requires multiple levels of instruction and practice. Skills such as developing vocabulary and word knowledge, understanding sentence structure and grammar, and using strategies such as determining main ideas and summarizing are important and are part of the Maryland College and Career Ready ELA standards to which districts have aligned their curricula. Increasingly, it is becoming evident that the knowledge a reader brings to the text (background knowledge or schema) is also critically important. Research continues to show that there is a reciprocal relationship between a student's base of knowledge and successful reading comprehension. Having knowledge related to the topic of a text improves a student's comprehension, and comprehension of the text in turn allows the reader to build new knowledge.

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<sup>55</sup> Mississippi rising? A partial explanation for its NAEP improvement is that it holds students back. Todd Collins. Fordham Institute. <https://fordhaminstitute.org/national/commentary/mississippi-rising-partial-explanation-its-naep-improvement-it-holds-students>

<sup>56</sup> Retraining an entire state's elementary teachers in the science of reading. Ariel Gilreath. The Hechinger Report. <https://hechingerreport.org/retraining-an-entire-states-elementary-teachers-in-the-science-of-reading/>

<sup>57</sup> DPI maps out science of reading plan and returns to Amplify's mCLASS tool to assess readers. Rupen Fofaria. EdNC. <https://www.ednc.org/2021-06-03-dpi-science-reading-rollout-plan-amplify-mclass-tool-assess-young-readers/>

<sup>58</sup> Colorado READ Act. Colorado Department of Education. <https://www.cde.state.co.us/coloradoliteracy>

Creating a coherent understanding of what one reads modifies the background knowledge that is available for subsequent reading comprehension either later in the same text or in future reading of related texts (Catts, 2021).

To support students' growing comprehension abilities, the most effective reading materials are arranged by topic of study in a logical and sequential manner to form an integrated, content-rich curriculum that develops students' core knowledge about the world. Additionally, in the earlier grades, there must be a strong emphasis on teaching foundational skills. Depending on the grade, instruction in decoding, spelling and fluency should comprise its own unit. The strongest approaches also integrate key comprehension strategies that are often employed in traditional ELA instruction, such as inferencing and paraphrasing; however, some strategies are best selected and taught based on their relevance to the text and purpose (Catts, 2021).

A recent meta-analysis showed that when compared with traditional programs in which literacy and content instruction were provided separately, integrated, content-rich programs resulted in students scoring significantly better on vocabulary and comprehension, including on standardized measures of comprehension (H. Hwang, S. Cabell, and R. Joyner, 2014). Based on this research, curriculum and instructional changes in Maryland districts may need to shift to a more integrated approach for ELA and other content areas.

Considering the research and examples of innovative approaches adopted by other states, Table 4 below provides a structure of requirements and supports for students achieving above grade level, as well as students needing additional supports. *The Blueprint* requires that all students who are not on track for CCR be given additional opportunities to accelerate their learning. The suggestions below provide possible course progressions leading toward CCR beginning in PreK and continuing through the end of grade 12 if needed. School districts can implement a variety of plans and unique structures to support students.

Table 4 below shows a course sequence that provides options for how the English language arts and English courses could be structured. All core curricula should incorporate high-impact pedagogy and practices described above. All students must receive content rich curriculum, or Tier I instruction, and as demonstrated through multiple measures, such as the universal screener, Tier II or III instruction, grounded in the science of reading, as described above. The expectation of this model is that formative and summative assessment practices are used frequently to identify which students need an extended curriculum (using targeted supplemental instruction) or are ready for a college and career course sequence.

**Table 4: Potential ELA Course Sequence**

Course Sequence	PreK-3 <sup>rd</sup> Grade	Grade 4 and 5	Grade 6-8	Grade 9-10	Grade 11 and 12
<b>Not on Target to Meet the CCR Standard</b>	Standards-based Core curriculum, grounded in the Reading Foundational Skills Standards  AND Targeted, evidence-based <b>supplemental instruction</b> for students demonstrating need on the reading screener/ diagnostic	Standards-based Core curriculum  AND Targeted, evidence based <b>supplemental instruction.</b>	ELA course (6-8)  AND Students would be enrolled in an intervention course	English 9 and 10  AND Individualized supports, potentially including an intervention course.	English 11 and 12  AND Transitional Courses that include instruction aligned to an individualized plan.
<b>On Target to Meet the CCR Standard</b>	Standards-based Core curriculum (ELA) from PreK through grade 3	Standards-based Core curriculum (ELA) 4 <sup>th</sup> -5 <sup>th</sup> grade  AND extension activities or GT programs for students who have mastered grade level standards	ELA course (6-8)  AND GT programs when appropriate	English 9 and 10  Honors and GT courses are available when appropriate	English 11 and 12  Honors, GT, AP, or IB courses are available when appropriate Dual Enrollment (English 101 or 102) is also available

## SCIENCE

Traditionally, many high schools placed Biology at the start of the high school progression. This practice dates back over a century to a time when understanding of living systems stood in stark contrast to contemporary understanding. In recent years, some schools “flipped” the traditional order of courses to introduce students to physics as a first course. The rationale highlights the imperative of an understanding of core physical principles as fundamental to developing an understanding of complex chemical and biological systems. Regardless of the sequence of courses, Maryland’s Next Generation Science Standards (NGSS) make it clear that all students should have access to rigorous and inspiring learning experiences in each of the major disciplines of science including the Earth and space sciences, the biological sciences, and the physical sciences.

An optimal high school course progression in science is not clearly articulated in either the literature or in practice. What is clear, however, is that all students must engage regularly and actively in scientific learning experiences that emphasize the Science and Engineering Practices alongside critical scientific principles that equip students with knowledge and skills to identify and use scientifically sound evidence to make decisions for themselves, their families, and their communities.

Possibly more important than a student’s acquisition of knowledge in science is the student’s engagement in the practice of science. Maryland’s NGSS emphasize these Science and Engineering Practices (SEP) as critical in the development of scientific literacy. Thus, regardless of the content anchoring student learning in science, students must regularly engage in asking investigable questions; designing and conducting scientific investigations; identifying, evaluating, and critiquing scientific evidence; and communicating about scientific information.

High school science courses should build on the scientific foundation established beginning in kindergarten and must align to support students’ ability to demonstrate scientific literacy by 10<sup>th</sup> grade. Maryland’s NGSS describe a developmentally appropriate and vertically articulated progression from kindergarten through the end of high school leading students to achievement of scientific literacy and college and career readiness. Rich student experiences in elementary and middle school science are critical to student success in achieving CCR in high school science.

*The Blueprint* leaves the door open for studying how science should be included in the CCR standard but sets no specifics. Ideally, a CCR standard in science will not depend upon demonstration that a student has acquired a rigid set of knowledge. Instead, it will measure a student’s ability to build scientific understanding and to make sense of scientific phenomena using important scientific principles of multiple content areas with a heavy emphasis on the Science and Engineering Practices. If the science component of the CCR standard is based in these analytical skills, the science course sequence from elementary school through middle school and high school can then be refined to support student success.

## SOCIAL STUDIES

Social studies education prepares students with the knowledge and skills necessary to be empowered, informed, and socially responsible participants in our nation’s democracy while also preparing students to be college and career ready. A robust social studies program supports the broader *Blueprint* goal of preparing students to be College and Career Ready in English by the end of 10th grade by providing critical background knowledge required for achievement in English language arts.

Research on inquiry-based social studies programs in elementary grades demonstrates a strong positive relationship between student performance on ELA assessments and the amount of time dedicated to social studies education in early grades. This body of knowledge reinforces the role of background knowledge on reading development. A 2019 University of Michigan Literacy study indicates that cutting time in social studies to privilege time in ELA literacy has a negative impact on reading achievement in early grades, especially among children in poverty who receive less education in science and social studies. This research indicates that content



area literacy instruction in science and social studies not only promotes learning in those contents, but also improves reading comprehension and achievement in other areas.<sup>59</sup>

The 2020 Thomas Fordham Institute's longitudinal study on the impact of elementary social studies supports the University of Michigan's study and found that more instructional time devoted to social studies is correlated with greater reading growth from first through fifth grade by 15%. Additional time in other content areas, including ELA, did not result in the same reading growth. These findings are consistent across subgroups including students from lower-income households and non-English speaking homes.<sup>60</sup>

Uniting all this research is the importance of background knowledge in achieving growth on ELA assessments. A 2005 study by Robert Marzano identified that 41.5% of the content on ELA assessments in grades k-2 was social studies based. That number increased to 58% of the content in grades 3-5.<sup>61</sup> Studies such as Marzano's are important for educational leaders to consider as they highlight the importance of background knowledge in reading development. "The impact of not building enough background knowledge," argues Marzano, "hits disadvantaged children especially hard since they have fewer opportunities to do so on their own through trips to museums and art galleries as well as travel to distant parts of the United States and around the world." The importance of background knowledge is furthered by the Reading for Understanding Initiative (RFUI) which engaged in a five year analysis of the literature and practice of reading instruction. "Knowledge," the RFUI report argues "is cause, consequence, and covariate of reading comprehension," and that "reading comprehension interventions were often (if not always) coordinated with content-area learning goals, usually with comprehension activity enacted in the service of content acquisition." The RFUI expanded our understanding of the types of knowledge necessary for particular acts of reading" to include "disciplinary knowledge about topics—such as how explanation and argumentation operate, what count as claims and evidence, how oral and written discourse conventions shape those processes, and how we come to know what we know—are central to students' acquisition of knowledge and inquiry practices within disciplines. "All of these factors are central to a social studies education that is offered consistently to all students beginning in early elementary school and continuing through the end of high school.<sup>62</sup> It is important that all students in Maryland have access to daily social studies instruction in order to build their background knowledge, to develop their community identity, and strengthen their reading skills.

Despite the research findings demonstrating a positive impact on reading development, elementary schools in Maryland have continued to limit time dedicated to social studies instruction. Since 2015, MSDE has conducted a legislatively mandated survey of science and social studies teachers and supervisors. A finding from the results of this survey is that participants report that the time dedicated to social studies instruction, the frequency and type of provided professional development, and the type of instructional materials available to elementary teachers in Maryland are inconsistent and fall significantly below that afforded for their secondary counterparts.<sup>63</sup> These results reflect a misguided national trend to marginalize elementary social studies in early grades in order to privilege reading and math instructional time.<sup>64</sup> *The Blueprint* offers Maryland the opportunity to disrupt this approach.

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<sup>59</sup> Duke, Nell. "Acquiring Science and Social Studies Knowledge in Kindergarten Through Fourth Grade: Conceptualization, Design, Implementation, and Efficacy Testing of Content- Area Literacy Instruction" Nell Duke Acquiring Sci & SS Knowledge in K-4

<sup>60</sup> Tyner, Adam, et. al. "How Social Studies Improves Elementary Literacy," *Social Education* 85(1) , pp.32-39 ©2021 National Council for the Social Studies. <https://fordhaminstitute.org/national/resources/social-studies-instruction-and-reading-comprehension>

<sup>61</sup> Marzano, Robert. *Building Background Knowledge for Academic Achievement*. ASCD, 2005.

<sup>62</sup> P. Pearson et al., eds. (2020). *Reaping the Rewards of the Reading for Understanding Initiative*. Washington DC: National Academy of Education. <https://naeducation.org/wp-content/uploads/2020/07/NAEd-Reaping-the-Rewards-of-the-Reading-for-Understanding-Initiative.pdf>

<sup>63</sup> 2021. Report on the 2021 Survey of Social Studies Teachers and Supervisors , Maryland State Department of Education. [https://marylandpublicschools.org/about/Documents/DCAA/SocialStudies/2021\\_Social\\_Studies\\_Survey\\_Results.pdf](https://marylandpublicschools.org/about/Documents/DCAA/SocialStudies/2021_Social_Studies_Survey_Results.pdf)

<sup>64</sup> Fitchett, P. G., Heafner, T. L., & VanFossen, P. An Analysis of Time Prioritization for Social Studies in Elementary School Classrooms. *Journal of Curriculum and Instruction* (Vol. 8, No. 2, Dec. 2014), pp.7-35. <http://www.joci.ecu.edu/index.php/JoCI/article/viewFile/v8n2p7/pdf>



In order to meet the ambitious *Blueprint* goals, Maryland schools need to rethink current practice. Promoting a scheduled course sequencing in social studies that is research based and acknowledges the role of background knowledge on reading development will benefit student learning in both social studies and ELA. As more emerging research suggests, integrating effective, scientifically based ELA instruction into science and social studies classes at the elementary school level “may be a means for reducing later gaps in reading comprehension outcomes.”<sup>65</sup>

The *Blueprint* gives Maryland schools the opportunity to rethink how time is used in elementary grades and to ensure that they provide ample time for students to develop background knowledge in social studies and prepare them for CCR Readiness.

## SUPPORTS FOR TEACHERS AND SCHOOLS – CURRICULUM RESOURCES

### Blueprint Requirements for Curriculum Resources

Adopted by the Maryland State Board of Education in 2010, Maryland's College and Career Ready Standards in mathematics and English Language Arts identify what PreK-12 students should know and be able to do by the end of each grade level or course, thus ensuring they are ready for college and career upon graduation<sup>66</sup>. Likewise, the Maryland Next Generation Science Standards (NGSS), adopted in 2013, and the Maryland social studies standards, revised and readopted in 2020, lay out what a PreK-12 student should know and be able to do<sup>67</sup>. Each set of state standards for all core disciplines have been approved by the State Board of Education, are supported by instructional frameworks, and are supported by an assessment system (MCAP) aligned with federal and state requirements.

*The Blueprint* requires MSDE to provide “curriculum standards and curriculum resources for each subject, at each grade level, that build on one another in a logical sequence.” The resources must include:

- Course syllabi
- Sample lessons
- Student work samples that meet proficiency standards
- Explanations of why student work meets standards
- Curriculum units aligned with course syllabi

When aggregated, the curriculum resources should form a “model course” or “unit” and when the units are compiled, they should form “complete courses” that “when taken in sequence” prepare a student to be college and career ready. These materials may be used by schools if they choose to do so, but they must be used to improve instructional practices if an expert review team identifies curriculum as a barrier to student performance in a particular school.

Currently, MSDE Teaching and Learning staff are reviewing research on state level curricular materials development and examining state models on high quality curriculum resources to determine a plan to align research with *The Blueprint* expectations for curriculum resources. Three options for the development of these resources include full development by MSDE, identifying and recommending commercial or open educational materials, or a combination of both options. Once an approach is selected, MSDE will work in consultation with “highly effective teachers and teachers on the career ladder” to develop resources for each subject.

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<sup>65</sup> Cabell, Sonia and HyeJin Hwang. Building Content Knowledge to Boost Comprehension in the Primary Grades (Vol. 55, Issue S1), pp S99-S107 <https://ila.onlinelibrary.wiley.com/doi/10.1002/rrq.338>.

<sup>66</sup> Maryland College and Career Readiness Standards in Mathematics and English. <https://www.marylandpublicschools.org/about/Pages/DCAA/Math/MCCRSMath.aspx>, and <https://www.marylandpublicschools.org/programs/Pages/ELA/MCCR.aspx>.

<sup>67</sup> Ibid.

The development of curricular resources will occur following State Board approval of the results from the third-party research study on what constitutes an effective standard for determining college and career readiness by the end of 10th grade in mathematics and English language arts. If the study recommends that MSDE revise its standards for English language arts and mathematics, the standards will be revised first and then the curricular materials aligned with the standards will be developed. Science and social studies standards have already been board-adopted and approved, yet MSDE will wait to develop the curricular resources to support those courses until a final determination is made regarding mathematics and English language arts.

MSDE is required to provide exemplar curricula and resources for all courses and grade levels that districts and schools can and must use if Expert Review Teams' findings dictate the need to improve instructional practices.

Upon completion and approval of a CCR standard for science, social studies, mathematics, and English Language Art, MSDE must:

- Determine if Maryland's College and Career Ready Standards in mathematics and English Language Arts, Maryland Next Generation Science Standards, and the Maryland's Social Studies Standards and Frameworks align with the respective CCR standard in each discipline and provide a progression from PreK-grade 10.
- Work in consultation with highly effective teachers and teachers on the career ladder to develop curriculum standards and resources for each subject.

## Section 3: Assessments

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To properly ensure a student's progress toward meeting the CCR standards and all intermediate benchmarks, a series of formative and summative assessments must be developed and administered. These must align with any course and curriculum changes that have been made and also satisfy any ESSA accountability requirements.

The current MCAP assessments for mathematics and ELA were designed to measure a student's knowledge of the standards taught in the course just completed. These do not necessarily measure a student's readiness to succeed in college and the workforce, as this set of skills and knowledge could be a cumulative measure than spans content from multiple years and courses. The robust research studies investigating the knowledge and skills needed to succeed in college and career may conclude that the current MCAP assessments do measure the proper content; however, the research may find that these assessments contain gaps and revisions are needed to the assessments.

If the study shows that MCAP needs to be revised to be an applicable measure of CCR, new assessments for math and ELA must be developed. These would be administered as a standards-setting field test in the 2023-2024 school year, with a full high-stakes administration of the MCAP assessments in the 2024-2025 school year.

### END OF COURSE ASSESSMENTS

The Code of Maryland Regulation (COMAR) 13A.03.02 Graduation Requirements for Public High Schools in Maryland was amended and adopted by the State Board on May 25, 2021. With this adoption, the graduation requirement related to assessments changed from the requirement to earn a passing score on a stand-alone assessment in algebra, English language arts, science, and government to an End-Of-Course (EOC) assessment requirement counting for 20 percent of the student's final grade in the respective course.

At the February 22, 2022 State Board Meeting, the State Board granted the Maryland State Department of Education (MSDE) permission to publish amendments to COMAR 13A.03.02 Graduation Requirements for Public High Schools in Maryland to remove the EOC graduation requirement for the mathematics and English language arts assessments. English and mathematics assessments will now be given as measures of College and Career Readiness. The comment period closed May 23, 2022; however substantive changes are needed which will be discussed at a future State Board meeting.

The EOC graduation requirement will begin in the 2023-2024 school year. The Maryland State Board of Education approved a waiver for the EOC graduation requirement for the 2022-2023 school year. To ensure a successful transition for the 2023-2024 school year, the MSDE will continue to collaborate with LEA staff and develop materials that are identified by staff as necessary for a successful implementation.

### TECHNICAL SKILLS ASSESSMENTS

Technical Skills Assessments are locally-developed, end-of-course assessments that lead to college credit or third-party assessments that lead to a recognized postsecondary credential. Postsecondary credentials may include an industry-recognized certificate or certification, a certificate of completion of an apprenticeship, a license recognized by the State of Maryland or Federal Government, or an associate degree, as defined by section 3 of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102). CTE students complete Technical Skills Assessments as part of their CTE programs of study to demonstrate proficiency in content necessary for specific career fields.

## LOCAL ASSESSMENTS

Summative standardized assessments such as SAT, ACT, and state-administered assessments such as the PARCC may not always be the best method of measuring students' college and career readiness. Due to differences in learning needs, students may require alternative methods of properly and accurately demonstrating their knowledge and skills.<sup>68</sup> Nebraska and Vermont<sup>69</sup> have provided support for the identification, development, and administration of local assessments that are aligned with state content standards.<sup>70</sup>

## PERFORMANCE-BASED ASSESSMENTS

Performance-based assessments can be an effective option for states that are interested in using a measure that gauges how students apply their knowledge and skills to real-world problem-solving. This option requires students to perform tasks or to generate their own responses, as opposed to standardized assessments which typically require selection from pre-determined responses. It allows students to demonstrate their higher-order thinking skills and how these skills might apply to college and career contexts.<sup>71</sup> This can be an option for high school students to demonstrate their competence with college-level coursework, and, consequently, their readiness for college and postsecondary work.

## ASSESSMENT ADMINISTRATION STRUCTURE OPTIONS

In addition to the content assessed by the summative CCR assessments and technical skills assessments, the mode of administration of the assessments could also be investigated. These structures could be thoughtfully designed to align more fully with MSDE guiding principle of ensuring equitable access for all students.

Traditionally, major assessments are administered only at select times during the year with all students in the course taking the assessment in the same time frame. This administration mode has strong historic roots, building from the traditional school model of all students progressing at the same rate and only having the option to move to the next grade level once a year over the summer; however, *The Blueprint* details a vision for students that is more flexible and less constrained to the traditional school calendar. As further explained in Section 4: Post-CCR Pathways, an 11<sup>th</sup> or 12<sup>th</sup> grade student who has not yet met the CCR standard should have the opportunity to prove mastery and enter the Post-CCR Pathways as soon as possible. This vision raises the question of what structures can be implemented to allow students to show mastery as soon as they are ready. A potential answer to this issue is to take advantage of the Every Student Succeeds Act's Innovative Assessment Demonstration Authority (IADA) program which gives states flexibility in how the assessments used for accountability purposes are administered. The states that are participating in IADA have implemented Through-Year Assessments, which break up the large year-end tests into smaller tests that are administered over the course of the school year. These allow for flexible administrations, which can align test timing with associated instructional units; produce results throughout the year that teachers can use to inform and personalize instruction for students; and provide multiple data points on student achievement, reducing the concern that student performance is judged through a single moment in time.<sup>72</sup>

Another potential assessment administration model to consider is to separate the College and Career Readiness assessments from individual courses all together. Proving mastery of College and Career Readiness should be a

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<sup>68</sup>Update, C. S. A. I. (2018). Selected Alternatives for Assessing College and Career Readiness. <https://files.eric.ed.gov/fulltext/ED588469.pdf>

<sup>69</sup>Darling-Hammond, L., Rustique-Forrester, E., & Pecheone, R. L. (2005). Multiple measures approaches to high school graduation. Stanford, CA: The School Redesign Network at Stanford University. Retrieved from <https://edpolicy.stanford.edu/sites/default/files/publications/multiple-measures-approaches-high-school-graduation.pdf>

<sup>70</sup>Darling-Hammond, L. (2017). Developing and measuring higher order skills: Models for state performance assessment systems. Washington, DC: Council of Chief State School Officers. Retrieved from <https://www.ccsso.org/sites/default/files/2017-12/AssessmentModelsCCSSOLPI03162017.pdf>

<sup>71</sup>Cassidy, L., Keating, K., & Young, V. (n.d.). Dual enrollment: Lessons learned on school-level implementation. SRI International. [www2.ed.gov/programs/slcg/finaldual.pdf](http://www2.ed.gov/programs/slcg/finaldual.pdf)

<sup>72</sup><https://www.nciea.org/blog/educational-assessment/following-their-lead>

culminating activity for students as they look toward their next steps and not just a final exam for one class. Maryland could implement an assessment of CCR standards that is computer-adaptive, able to be taken at any point when the student is ready to do so, and is focused on the specific skills and knowledge detailed in the CCR standards. Any new assessments, including computer-adaptive formats, must be designed to ensure accessibility for all students, including those with physical, sensory, and other disabilities.

## CASE STUDIES

### North Carolina

North Carolina: Personalized Assessment Tool is a system of three Through-Course assessment opportunities consisting of three modular interims (based on cluster of standards, not mini-summative) where teachers can see items and student responses after administration. The interim assessments are optional and can be administered in any order and time based on local scope and sequencing. The Personalized Assessment Tool provides educators, students, and stakeholders with immediate and detailed feedback on grade level specific content standards so classroom instruction may be tailored to individual students' needs and serves as a reliable indicator to determine appropriate-staged adaptive summative assessment that will provide an academic achievement level for students and for the statewide accountability model.<sup>73</sup>

### Texas

The Texas Assessment Initiative Assessment 2.0 (TSIA2) is the assessment instrument used to determine college readiness for non-exempt students, as required by the Texas Success Initiative. TSIA2 helps determine whether a student is ready for college-level coursework in English language arts and reading (ELAR) and mathematics. Students who score below one or more college readiness benchmarks may be automatically routed to the TSIA2 Diagnostic Test for ELAR and/or mathematics. The score report includes a diagnostic profile based on performance, consisting of descriptors of proficiency in each content category and diagnostic level based on overall performance on the Diagnostic Test.<sup>74</sup>

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<sup>73</sup> North Carolina Personalized Assessment Tool. North Carolina Department of Public Instruction. <https://www.dpi.nc.gov/districts-schools/testing-and-school-accountability/state-tests/north-carolina-personalized-assessment-tool#development-timeline>

<sup>74</sup> Texas Success Initiative Assessment 2.0 (TSIA2). College Board. <https://accuplacer.collegeboard.org/students/prepare-for-accuplacer/tsia-texas-success-initiative-assessment>

## Section 4: Post-CCR Pathways

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Students meeting the College and Career Ready (CCR) standard will have access to several Post-CCR pathways at no cost to students. Post-CCR pathways should be flexible, allowing students to develop in-depth knowledge of a subject area, earn postsecondary credits, industry credentials, and/or engage in competitive entry college preparation programs. *The Blueprint* defines three distinct pathways for students to complete Post-CCR requirements. Pathways include a competitive entry college preparatory program, early college or dual enrollment program, or a career and technical education (CTE) program.

Post-CCR pathways provide students with the opportunity to develop in-depth knowledge in a subject area of their choosing. These pathways also enable high school students to earn a specific certificate, license, or other credential that is recognized and valued by the higher education and industry communities. *The Blueprint* specifies that once *Blueprint* policies have been fully implemented (school year 2031-2032), the Post-CCR pathways shall be available only to students who have met the CCR standard. Therefore, Post-CCR pathways are meant to be advanced coursework that would typically be completed in higher education; however, the access to the programs within the Post-CCR pathways during high school means that students can graduate high school to be not only ready for college and career, but also to be immediately ahead of peers from other states and to be competitive for any selective admission process. Additionally, individual courses within a pathway should not be restricted from students. This access to specific classes allows students to continue to explore their elective interests.

The central idea of building the systems and emphasizing College and Career Readiness and Post-CCR Pathways is the vision that the student is properly prepared for a meaningful next chapter after high school graduation. Each of the AP, IB, dual enrollment, and early college Post-CCR Pathways should allow students to develop in-depth knowledge that will aid them in college and be a step ahead in their collegiate coursework. The CTE programs may also provide students with that step ahead in college, on top of enabling students to secure a well-paying meaningful job as soon as possible through earning a credential that is recognized and desired by employers. Students should be trained in industries that are hiring and will continue to grow in the future. The role of high schools when offering Post-CCR pathways must be to align the program offerings to students with the market demands of the student's next steps.

Unfortunately, research has shown that this alignment is not always present. One such example of the misalignment between supply and demand is that CTE construction programs are often one of the most popular programs with a high enrollment. The construction programs of study can lead to earning certificates from NCCER, the main credentialing organization for this area. However, the NCCER construction certifications are oversupplied in all 24 states studied by the Credentials Matter project. This means that while schools are successfully enabling students to earn an NCCER construction certification, this certification is not in demand by employers. Because the labor market does not put a high value on these certifications, these students have no immediate tangible benefit to show for the time and effort put into earning a certification. That time could have been better spent focusing on a credential that is in demand in the labor market, allowing the student to earn a higher wage as soon as possible.<sup>75</sup>

This misalignment between supply and demand of credentials is not just an issue within the construction trade. Other general career readiness credentials such as financial literacy or basic first aid are the focus of many CTE programs and earned by many students. However, while these are considered expected skills for many occupations, the specific credentials earned are not sufficient to prove readiness for any one specific job. This means that the student completed this program of study developing skills that are expected at such a basic level

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<sup>75</sup> ExcelinEd and Burning Glass Technologies (2019) Credentials Matter Report 1: A National Landscape of High School Student Credential Attainment Compared to Workforce Demand <https://www.excelined.org/credentials-matter/>

of all applicants that they are not even considered in the job application process. Instead, these students need to go further and develop greater expertise to be desired by the labor market.

The misalignment of industry credentials is so pervasive that 10 of the 15 most commonly earned credentials are oversupplied in each of the 24 states that were studied, as shown in Figure 23.<sup>76</sup>

**Figure 23: Most Commonly Earned Credentials**

Rank	Credential	Credential Type	Credentials Earned	Percent Oversupplied	Supply/Demand Category	State Count
1	Microsoft Office Specialist		129,895	--		19
2	WISE Financial Literacy Certification		67,208	100%		7
3	NCCER - Core Curriculum		60,350	100%		12
4	Adobe Certified Associate		52,189	78%		19
5	Virginia Workplace Readiness Skills for the Commonwealth		42,313	100%		1
6	Basic First Aid		36,102	100%		11
7	NCCER - Carpentry		33,392	100%		14
8	IC3 Certification		22,840	100%		13
9	Automotive Service Excellence Certification		22,726	16%		24
10	ServSafe Certification (Manager/Food Handler/Allergens/Alcohol)		21,634	47%		20
11	OSHA 10-Hour - General		18,067	100%		12
12	Certified Nursing Assistant		16,351	100%		19
13	FEMA National Incident Management System Certification		14,544	100%		8
14	Autodesk Certified User		10,394	--		19
15	Certified Internet Web Certification		8,736	100%		10

License   
 Certification   
 Software   
 General Career Readiness   
 CTE Assessment

● No Data   
 ● Very Undersupplied   
 ● Moderately Undersupplied   
 ● Supply Meets Demand   
 ● Moderately Oversupplied   
 ● Very Oversupplied

Note: Percent Oversupplied and Supply/Demand Category are based on comparing credentials earned to demand data from just those states that provided data.

<sup>76</sup> ExcelinEd and Burning Glass Technologies (2019) Credentials Matter Report 1: A National Landscape of High School Student Credential Attainment Compared to Workforce Demand <https://www.excelined.org/credentials-matter/>

There are three Post-CCR pathways detailed in *The Blueprint*:

- Advanced Placement (AP) or International Baccalaureate (IB) programs
- Dual enrollment or early college programs
- Career and Technical Education (CTE) programs

MSDE will continue to engage local education agencies, post-secondary education institutions, and best practices research to develop and propose specific policies for pathway requirements. Each student will select and enroll in one of the Post-CCR pathways once they meet the CCR standard. Many students will meet the CCR standard at the end of the 10<sup>th</sup> grade, so the pathway requirements may be completed in the 11<sup>th</sup> and 12<sup>th</sup> grade.

Alternatively, students may be encouraged to enter a pathway as early as 9<sup>th</sup> grade, especially with CTE pathways, as students may attain CTE Concentrator status by the end of 10<sup>th</sup> grade.

Each of the Post-CCR pathways will allow for in-depth specialization in the chosen area as well as opportunities to explore additional subjects. While the specific pathway requirements have not yet been set, a pathway may require the student to earn credits for four or five courses that may also satisfy traditional course sequences and graduation requirements.

For students entering 9<sup>th</sup> grade in school year 2021-2022 or later, graduation requires course credit in the following courses:<sup>77</sup>

- English – 4 credits
- Mathematics – 4 credits
- Science – 3 credits
- Social Studies – 3 credits
- Fine Arts – 1 credit
- Physical Education – ½ credit
- Health – 1 credit
- Technology Education – 1 credit
- Program choice – 2 credits in the same World Language or 2 credits in an approved Advanced Technology Program, or 3+ credits in a State-approved Career and Technical Education Program

### Sample student course schedules

The following example course schedules give a glimpse into how students may complete a Post-CCR Pathway while also fulfilling all graduation requirements and have room to explore elective interests. Shaded courses will count toward a pathway's requirements. Any blank spaces indicate open electives or space for other graduation requirements.

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<sup>77</sup> Full Enrollment and Credit Requirements for graduation are available here:  
<http://www.dsd.state.md.us/comar/comarhtml/13a/13a.03.02.03.htm>



**Progression 1: Advanced Placement (AP) program**

**MEET CCR STANDARD**

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
<b>English</b>	English 9	English 10	English 11 AP	English 12 AP
<b>Math</b>	Algebra I	Geometry	Algebra II	Statistics AP
<b>Science</b>	Biology	Chemistry	Physics	Environment Sci AP
<b>Social Studies</b>	US History	US Government AP	World History AP	Economics AP
<b>Elective</b>	Health/PE	Technology	Elective	Elective
<b>Elective</b>	World Language	World Language	Fine Arts	Elective

**Progression 2: Dual Enrollment program: 60 credits**

MEET CCR STANDARD

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade Fall	11 <sup>th</sup> Grade Spring	12 <sup>th</sup> Grade Fall	12 <sup>th</sup> Grade Spring
<b>English</b>	English 9	English 10 <sup>^</sup> - 3	English 11*: 3	Elective*: 3	English 12*: 3	Elective*: 3
<b>Math</b>	Geometry	Algebra II	PreCalc*: 3	Elective*: 3	Statistics*: 4	Elective*: 3
<b>Science</b>	Biology	Chemistry	Science Elective*: 4	Science Elective*: 3	Elective*: 3	Elective*: 3
<b>Social Studies</b>	US History	US Government		World History*: 3	Elective*: 3	Elective*: 3
<b>Elective</b>	Health/PE	Fine Arts <sup>^</sup> : 3				
<b>Elective</b>	World Language <sup>^</sup> : 4	World Language <sup>^</sup> : 4				

<sup>^</sup> Courses taken at HS. \* Courses taken at community college

**Progression 3: Dual Enrollment program: 30 credits**

MEET CCR STANDARD

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade Fall	12 <sup>th</sup> Grade Spring
<b>English</b>	English 9	English 10	English 11 <sup>^</sup> : 3	English 12*: 3	English Elective*: 3
<b>Math</b>	Algebra I	Geometry	Algebra II	Statistics*: 3	Elective*: 3
<b>Science</b>	Biology	Chemistry	Physics 1 AP	Biology*: 4	Elective*: 3
<b>Social Studies</b>	US History	US Government	World History <sup>^</sup> : 3	Psychology*: 3	Elective*: 3
<b>Elective</b>	Health/PE	Technology	Fine Arts <sup>^</sup> : 3		
<b>Elective</b>	World Language	World Language	Elective		

**Progression 4: Career and Technical Education (CTE):  
Construction – Carpentry**

MEET CCR STANDARD

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English 9	English 10	English 11	English 12
Math	Algebra I	Geometry	Algebra II	Math Elective
Science	Biology	Chemistry	Physics	Elective
Social Studies	US History	US Government	Elective	Carpentry II
Elective	Health/PE	Technology	Carpentry I	
Elective	Fine Arts	Elective	Construction Core	Apprenticeship

**Progression 5: Career and Technical Education (CTE): Construction – Carpentry:  
CTE Concentrator used as CCR standard**

MEET CCR STANDARD

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English 9	English 10	English 11	English 12
Math	Algebra I	Geometry	Algebra II	Math Elective
Science	Biology	Chemistry	Physics	Elective
Social Studies	US History	US Government	Fine Arts	Elective
Elective	Health/PE	Technology	Carpentry I	Carpentry II
Elective	Construction Foundations	Carpentry Core	Credential Exam Prep	Apprenticeship

## Career and Technical Education (CTE) Programs

As with other Post-CCR pathways, students in CTE programs will be allowed to enroll in CTE courses prior to meeting the CCR standard. Several CTE programs take up to four years for students to accumulate hours required to earn industry certifications while concurrently completing all graduation requirements. For example, students in the cosmetology CTE program must complete 1,500 hours of theory and practical application to become a licensed cosmetologist. Students in food and beverage management CTE programs must complete all classroom-related instruction and at least 400 hours of work-based learning experiences. Students must start these CTE programs in grades 9 or 10 to meet graduation and licensing requirements.

## Apprenticeships / Industry Credentials

*The Blueprint* sets a goal for 45% of high school graduates completing an apprenticeship or an industry-recognized occupational credential by the 2030-2031 school year. The ambitious goal of nearly half of the state's high school students participating in apprenticeships indicates the priority of this initiative and the immense benefits that students and employers can gain. A strong apprenticeship program enables students to gain robust on-the-job training that enables them to complete the apprenticeship with a competency in that industry. An apprenticeship could consist of a three-year commitment where the student completes on-the-job training, contributes to production, and receives related classroom instruction.

Students benefit greatly from this model by continuing their academic studies and graduating high school in the traditional four-year timeframe while also developing highly valuable industry-specific skills. After the completion of the apprenticeship, the students can either continue working at that company, or be highly competitive when applying for other positions. Employers are also critical partners and eager participants based on the benefits of employing apprentices, including their quick-learning, high productivity, energy, enthusiasm, and opportunities to develop their current staff through the training process.

In Maryland, apprenticeships for high school students are coordinated through The Apprenticeship Maryland Program (AMP). The Apprenticeship Maryland Program is a Career and Technical Education (CTE) program of study implemented in partnership with the Maryland Department of Labor. The program consists of at least one year of related classroom instruction and a workplace component of at least 450 hours. The workplace component is a mentored, on-the-job, work experience where students are paid at least minimum wage. The experience is guided by a Student Rating/Work-based Training Plan and a formal agreement among the student, school, and employer. AMP began its first pilot implementation in 2016-2017 and now has nearly 300 employers actively participating, representing industries including architecture, healthcare, construction, hospitality, manufacturing, government, and others.<sup>78</sup> MSDE publishes data dashboards that display CTE student enrollment, performance outcomes, earned industry credentials, and participation in work-based learning experiences disaggregated by race, gender, and student service group.<sup>79</sup>

Employers are key to the success of AMP. When local education agencies decide to implement AMP, staff members start by identifying, recruiting, and educating employers about their roles and responsibilities prior to recruiting students. Potential employers may be found from the local education agency's existing Local Advisory Councils, Program Advisory Committees, Work-based Learning Employers, Chamber of Commerce, Workforce Development Boards, parents, etc.

Staff members in local education agencies also work with the Maryland Department of Labor's Navigators to recruit businesses and employers. There are currently nine Navigators assigned to different regions in the state. Their responsibility is to help recruit new employers to provide apprenticeship opportunities, as well as help the

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<sup>78</sup> Youth Apprenticeship Advisory Committee Annual Report 2021. Maryland Department of Labor.

<http://www.labor.maryland.gov/employment/appr/youthapprannrep2021.pdf>

<sup>79</sup> CTE Dashboards. MSDE. <https://www.mdctedata.org/dashboards/enrollment.php>

new employers navigate the process of becoming an apprenticeship employer. Although their primary focus is on the adult side of apprenticeship, rather than high school youth apprenticeships, the Navigators also work with local education agencies through the AMP Coordinators to assist in identifying employers for Maryland's youth apprenticeship initiative.

The Maryland Department of Labor created a streamlined process specifically for the recruitment of youth apprenticeship employer partners. The goal is to introduce new employers to the world of apprenticeship through an easier process and then encourage them to become registered sponsors. The difference between the two models is that youth apprenticeship employer partners are not registered in the state or federal apprenticeship systems; thus, the employers are not held to same level of accountability as registered sponsors.

The streamlined process includes the following steps:

1. The potential employer submits an online application
2. The Navigator and AMP Coordinator arrange a site visit to ensure it is a safe environment for the students
3. The AMP Coordinator works with the employer to determine the related instruction
4. All information regarding the employer, the position, location, and related instruction is submitted to the Maryland Apprenticeship and Training Council (MATC) for final approval

MATC meets the second Tuesday every other month. Once businesses are approved, the employers are then able to interview and hire the student(s). In order to be approved by MATC, businesses must pay minimum wage or higher, commit to a minimum of 450 paid hours of on the job training, supervise the apprentice, have an apprenticeable occupation, fill out the employer application, sign the youth apprenticeship agreement, and work with the local school on the employment/occupation checklist.

### Benefits for Students in AMP

The overarching goals of Apprenticeship Maryland are to meet workforce demands by helping students. AMP allows students to:

- Earn a salary while learning valuable and marketable industry skills
- Receive instruction at the worksite by skilled mentors
- Learn and practice technical and employability skills under the guidance of a professional
- Earn credit to meet high school graduation requirements
- Earn a State Skill Certificate signed by the Secretary of the Maryland Department of Labor for meeting all program requirements
- Get a jumpstart into an existing adult apprenticeship or full-time employment

#### STUDENT APPRENTICESHIP EXAMPLE:

*One of the youth apprentices, a graduate from Brunswick High School, received a youth apprenticeship with Insul-Tech, Inc, which insulates commercial and industrial ductwork. This young woman had previous experience though the Frederick County Career and Technology Center, where she studied architecture and was comfortable looking at blueprints. She had an interest in doing construction project management. At Insul-Tech, she worked as an estimator, ultimately completing nearly 40 individual jobs since starting the apprenticeship her senior year. She continues to work for Insul-Tech while attending the University of West Virginia.*

## Benefits for Businesses in AMP

Apprenticeships helps businesses by:

- Providing customized training
- Increasing knowledge
- Enhancing employee retention
- Providing safer workplaces
- Providing a stable and reliable pipeline
- Providing a systemic approach to training
- Saving money on wages
- Making a positive return on investment

### EMPLOYER APPRENTICESHIP EXAMPLE:

*Dynamic Auto is a business located in Frederick County, Maryland that needed highly educated technicians to maintain and repair the vehicles of today and tomorrow. Their Youth Apprenticeship Program is the door for someone that is considering a career in the Automotive Repair and Service industry. Dynamic Auto partnered with the Maryland Labor and Frederick County Public Schools, Career & Technology Center by enrolling in the Youth Program to bring students still in high school wanting some direction and a pathway to a career in the automotive industry. AMP has been so successful that this is the only pipeline for hiring employees.*

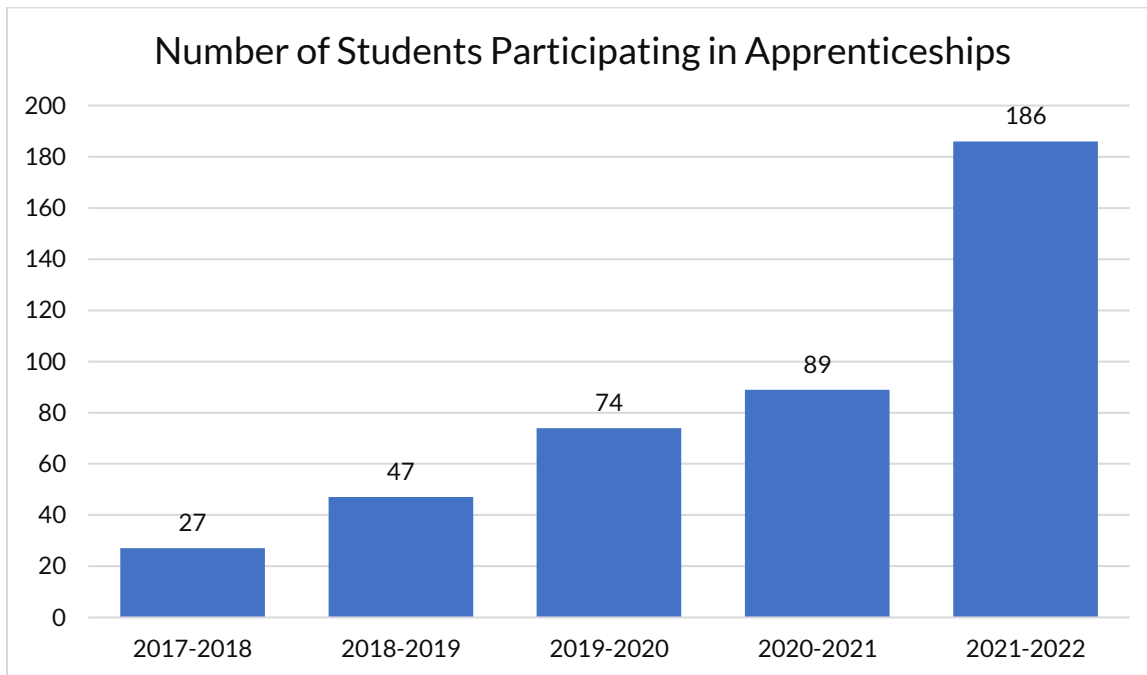
Apprenticeship Maryland employers are required to do the following:

- Work with a Labor Apprenticeship Navigator to complete the necessary steps to become a Registered Sponsor, a Participating Employer, or a Participating Youth Apprenticeship Employer
- Participate in a site visit by Labor and a local representative
- Interview potential youth apprentice(s)
- Employ the youth apprentice for at least 450 hours within a specified period (not to exceed 14 months)
- Develop a brief description of the on-the-job tasks, associated work processes, and competencies that the youth apprentice will be expected to master in the eligible career track occupation
- Instruct the youth apprentice in the required competencies provided for this program
- Conduct periodic and regular performance evaluations of the youth apprentice as deemed appropriate
- Pay the youth apprentice for all work performed during the program at no less than minimum wage
- Comply with applicable child labor and employment of minors laws with regard to number of hours worked, prohibited occupations and equipment, and time of day employment for youth apprentices
- Provide safety instruction in work practices
- Provide safe equipment and facilities in compliance with OSHA requirements
- Be located in close proximity to the local education agencies currently participating in the Apprenticeship Maryland Program
- Have expected future entry level job openings in the eligible career track occupation

- Define the competencies and needed related instruction, and work with LEA educators to determine the related instruction options that are available and appropriate for each youth apprentice
- Assign a mentor and skilled trainers to work with the youth apprentice throughout the program
- Instruct the youth apprentice in the required competencies provided for this program
- Conduct periodic and regular performance evaluations of the youth apprentice as deemed appropriate
- Allow release time from work for mentor(s) and trainer(s) to attend relevant trainings or meetings
- Extend an offer of employment to the youth apprentice(s) upon completion of the program (encouraged, but not required)

**DATA: APPRENTICESHIP MARYLAND BY THE NUMBERS AS OF 06-24-2022**

**Number of Students Participating in Apprenticeships by School Year**



## Number of Students and Businesses Participating in Apprenticeships by School Year and District

School Year	School Systems Participating	Number of Participating Students	Total Number of Participating Students	Number of Employers
2016-2017 Pilot Phase	Frederick	11	11	14
	Washington	0		
2017-2018 Pilot Phase	Frederick	12	27	44
	Washington	15		
2018-2019	Frederick	23	47	109
	Talbot	1		
	Washington	23		
2019-2020	Allegany	3	74	171
	Baltimore City	0		
	Dorchester	3		
	Frederick	21		
	Howard	19		
	Kent	2		
	Queen Anne's	5		
	Talbot	8		
	Washington	13		
2020-2021	Allegany	1	89	236
	Baltimore City	0		
	Baltimore County	4		
	Carroll	0		
	Dorchester	8		
	Frederick	19		
	Howard	23		
	Kent	2		
	Queen Anne's	0		
	St. Mary's	6		
	Talbot	4		
Washington	22			



School Year	School Systems Participating	Number of Participating Students	Total Number of Participating Students	Number of Employers
2021-2022	Allegany	2	186	287
	Anne Arundel	1		
	Baltimore City	0		
	Baltimore County	10		
	Calvert	3		
	Caroline	1		
	Carroll	2		
	Charles	1		
	Dorchester	7		
	Frederick	12		
	Harford	0		
	Howard	20		
	Kent	0		
	Montgomery	4		
	Prince George's	1		
	Queen Anne's	4		
	St. Mary's	24		
Talbot	3			
Washington	90			
Wicomico	1			

**Selected Examples of The Number of Apprentices Per Employer**

School System	Student Participation (2021-2022)	Notes
Dorchester	7	In SY 2021-2022, The number of student apprentices per employer ranges from 1 to 3 student apprentices per site. One employer has three, and the remaining four employers have one apprentice each.

School System	Student Participation (2021-2022)	Notes
Frederick	12	12 students are placed with seven employers <ul style="list-style-type: none"> <li>One employer (Plamondon) has four apprentices.</li> <li>Two employers each have two apprentices.</li> <li>Four employers each has one apprentice.</li> </ul>
Howard	20	20 students are placed with 10 employers <ul style="list-style-type: none"> <li>It is dependent on the employers needs each year.</li> <li>Currently, students are working with 10 different employers.</li> <li>Humanim typically requests up to five but will be expanding the program for next year.</li> </ul>
St. Mary's	24	24 students are placed with 16 employers <ul style="list-style-type: none"> <li>One employer has three students are placed with one employer.</li> <li>Six employers each have two apprentices.</li> <li>Nine employers each has one apprentice.</li> </ul> Four approved employers had students during the 20-21 school year but are not taking students at all this year.
Washington	90	Students are placed with 25 different employers <ul style="list-style-type: none"> <li>52% have only 1 apprentice</li> <li>16% have 2-3 apprentices</li> <li>32% have 4 or more apprentices</li> </ul>

**Selected Examples of Student Apprentices' Schedules**

School System	Examples of Student's Schedules
Dorchester	<ul style="list-style-type: none"> <li>Student A takes English and Mathematics at Chesapeake College on Mondays and Wednesdays and works at their apprenticeship the remainder of the week.                             <ul style="list-style-type: none"> <li>Additionally, they are a student athlete playing Volleyball (Fall) and Softball (Spring).</li> </ul> </li> <li>Student B attends a Computer Aided Drafting Design (CADD) program Monday, Wednesday, Friday at Dorchester Career and Technology Center (8:00-10:30 am).                             <ul style="list-style-type: none"> <li>On Tuesday/Thursday, they report directly to the apprenticeship site at 8:00 am.</li> <li>They take academic core classes at their high school Monday-Friday 11:10 am - 12:30 pm.</li> <li>Depending on the project they are working on at the apprenticeship location, they may return to the work site in the afternoon, or their mentor may allow them to work remotely to conserve gas.</li> </ul> </li> </ul>
Frederick	Frederick County Public Schools students have four classes each day as part of a semester block schedule. <ul style="list-style-type: none"> <li>Most youth apprenticeship students use the following schedule:                             <ul style="list-style-type: none"> <li>Attend classes in the morning for Blocks 1 &amp; 2 (7:30-10:30 am)</li> <li>Work at their youth apprenticeship for Blocks 3 &amp; 4, continuing after the school day as well (11:00 am -end of workday).                                     <ul style="list-style-type: none"> <li>The exact schedule depends on the individual student and employer. The expectation is to be at the jobsite at least 3 hours each day.</li> </ul> </li> </ul> </li> </ul>

School System	Examples of Student's Schedules
Howard	<ul style="list-style-type: none"> <li>Student apprentices typically attend work in the morning, 6:00-11:00 am, and then go to their high school for English and Math courses in the afternoon. <ul style="list-style-type: none"> <li>Alternatively, students will go to school first and then go to work in the afternoon.</li> </ul> </li> <li>The student's exact schedule will depend on the industry and employer and what time they are most needed. <ul style="list-style-type: none"> <li>Students also have the option to take their graduation requirement classes at Howard Community College.</li> </ul> </li> </ul>
St. Mary's	<ul style="list-style-type: none"> <li>Each student receives an individualized schedule to accommodate the apprenticeship hours and course schedules.</li> <li>Student A will take English and Math at their high school during periods 1 and 2 and then leave for their apprenticeship.</li> <li>Student B may go to the Forrest Center for their CTE courses for periods 3, 4, and 5 and then leave for their apprenticeship after period 5 (about 12:15 pm).</li> </ul>
Washington	<p>There are three scheduling options for Student Apprentices:</p> <ul style="list-style-type: none"> <li>Student A may attend school for two or three morning periods for required core academic or CTE classes, and then attend their apprenticeship in the afternoon.</li> <li>Student B is on an alternating schedule, taking their core academic courses on A Day and every other Friday, and CTE courses on B Day and every other Friday.</li> <li>Student C will attend school full day and attend their apprenticeship on employer's 2<sup>nd</sup> shift in the afternoon.</li> </ul>

#### Industry Representation For Currently Registered Youth Apprentices:

AMP Business Percentages		
Industry Sector	# of Youth Apprentices	% of Total
Manufacturing	41	22.0%
Construction	36	19.4%
Education	29	15.6%
Healthcare	22	11.8%
Hospitality and Tourism	14	7.5%
Automotive	12	6.5%
Transportation and Logistics	5	2.7%
Government	4	2.2%
Architecture	2	1.1%
Engineering	2	1.1%
Aeronautics	1	0.5%
Association Management	1	0.5%
Business	1	0.5%
Finance, Banking and Real Estate	1	0.5%
Furniture Repair	1	0.5%
Information Technology	1	0.5%
<b>Total</b>	<b>1,886</b>	<b>100.0%</b>

## Wages

Employers are required to pay students at least at minimum wage for the hours worked. Minimum wage in Maryland is currently \$12.50 per hour. This rate increases to \$13.25 per hour in 2023, \$14.00 per hour in 2024, and \$15.00 per hour in 2025. Student apprentices are currently paid between \$12.50 and \$20.50 per hour. The current average wage for AMP students is \$13.55 per hour.

## Roadblocks to Increasing Participation in AMP

To increase the number of students participating in AMP, we need to look at the potential roadblocks or barriers that may prohibit students participating and completing a youth apprenticeship. The barriers can be broken into a few categories: transportation, scheduling/graduation requirements, and the availability of dedicated resources to the AMP program.

Transportation issues are a problem across the state for students and youth apprentices. The issues include not having a driver's license or reliable access to a car or public transit to get between their homes, schools, and jobs, especially in rural areas and communities of colors. Additional barriers of public transportation for students include the cost, the stops or stations are not close enough to where students live or work, the available routes and times don't sync with their schedules, and the unreliability of schedules. The Maryland Department of Labor is currently working on providing grant funding to schools to help pay for drivers' education for students who would be going into an apprenticeship. This would help with one factor, but students will still have to address the issue of the availability of a car and the cost of car insurance.

To complete the apprenticeship program, students are required to complete one year of related classroom instruction, which is facilitated by the school apprenticeship coordinators. Despite the dedication and excitement of apprenticeship coordinators at the schools, there is only one full-time youth apprenticeship coordinator in the state. To handle the increasing demands of managing additional apprentices across more schools, additional human capital resources across schools and school districts would be warranted.

## Intermediaries

Achieving *The Blueprint's* goal of having 45% of students completing an apprenticeship requires the development of a full system with shared visions and support from all relevant partners including employers, apprentices, schools, government agencies, and other service providers. As it can be a daunting task to try to match students and employers, an organization that acts as an intermediary can be a vital asset. An apprenticeship intermediary is an organization with the capacity, expertise, and network to help businesses and schools successfully create, launch, and expand apprenticeship programs. Intermediaries connect K-12 education, postsecondary education, and industry partners to manage the student's journey along the youth apprenticeship pathway. Intermediaries relieve the burden from the student or the school to facilitate the connections and ensure that each partner is benefitting and has specific needs met. CareerWise Colorado, one such intermediary, was able to place more than 600 apprentices with 179 employers in the first five years of operation.<sup>80</sup>

Maryland school systems also currently work with the youth apprenticeship employer partners to identify a schedule that works for both the employer and youth apprentice. MSDE has identified a number of ways in which youth apprentices can complete the classroom-related instruction. It can be done at the apprentice's high school, at the apprentice's work site, at the community college, or through an online course. These options provide students with the needed flexibility necessary to graduate high school and be a youth apprentice.

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<sup>80</sup> Apprenticeship programs in Colorado help grow workforce, give students path to career. Nicole Brady. ABC7.

<https://www.thedenverchannel.com/news/local-news/apprenticeship-programs-in-colorado-help-grow-workforce-give-students-path-to-career>

CareerWise, which provides apprenticeship intermediary services, outlines their three-year program, where students phase out their time in traditional high school coursework and phase in more time with on-the-job training and industry specific coursework to develop the apprentice fully.<sup>81</sup>

Figure 24

HOW IT WORKS	YEAR 1	YEAR 2	YEAR 3
<b>HIGH SCHOOL</b> ACADEMIC CLASSES	THE EQUIVALENT OF 3 DAYS PER WEEK	THE EQUIVALENT OF 2 DAYS PER WEEK	NONE
<b>ON-THE-JOB</b> TRAINING	12-16 HOURS PER WEEK	20-24 HOURS PER WEEK	32+ HOURS PER WEEK
<b>ADDITIONAL COURSEWORK</b> PATHWAY- AND OCCUPATION- SPECIFIC INDUSTRY CERTIFICATIONS AND HIGHER-ED COURSEWORK	<b>ON THE JOB UPSKILLING &amp; CERTIFICATION</b> APPRENTICE UPSKILLS FOR SPECIFIC OCCUPATION AND EARNS AN INDUSTRY RELEVANT CERTIFICATION.		HIGHER-ED COURSEWORK APPROVED BY BUSINESS AND APPRENTICE.

### APPRENTICESHIP INDUSTRIES IN MARYLAND

While apprenticeships in the US have commonly been concentrated in the construction trades, these opportunities can exist in any industry. Maryland’s current Career and Technical Education (CTE) programs consist of career clusters in Arts, Media, and Communications; Business Management and Finance; Construction and Development; Consumer Services, Hospitality, and Tourism; Environmental, Agriculture, and Natural Resources; Health and Bioscience; Human Resource Services; Information Technology; Manufacturing, Engineering and Technology; and Transportation Technologies. Any of these areas can support an apprenticeship evidenced by established program opportunities in IT, education, health care, and more. Career and technical education assessments are called Technical Skills Assessments (TSA). TSAs are end-of-course assessments that lead to college credit or third-party assessments that lead to a recognized postsecondary credential, such as an industry-recognized certificate or certification, a certificate of completion of an apprenticeship, or an associate degree. A comprehensive list of approved TSAs in Maryland along with accommodations for each assessment and data for the number of CTE students who attained a credential or postsecondary credit from completion of TSAs can be found on the Maryland CTE Data Dashboards.<sup>82</sup>

<sup>81</sup> Katz, Batia, and Diana Elliott. 2020. CareerWise: Case Study of a Youth Apprenticeship Intermediary. Washington, DC: The Urban Institute.

<sup>82</sup> Maryland CTE Data Dashboards. <https://www.mdctedata.org/dashboards/technicalskillsassessments.php>

## CTE Coordination in Maryland

MSDE collaborates proactively with stakeholders to revise the vision and direction for CTE. The revised vision for CTE in Maryland is grounded in ensuring that each student has access and opportunity to engage in career programs of study that align to high-skill, high-wage, and in-demand careers; lead to earning industry-recognized and/or postsecondary credentials that allow for entrance or advancement in a career field; and provide work-based learning experiences that require the application of academic and technical knowledge and skills in a work setting. Outcomes of the review informed revisions to industry credentials that students can earn, standards used for CTE courses, and credits required to graduate as a CTE completer. A Comprehensive Review of Standards, Credits, and Credentials for each CTE Program of Study was published in September 2020.<sup>83</sup> The Maryland Career and Technical Education Four-Year State Plan was intentionally developed to align with the goals of *The Blueprint*.<sup>84</sup>

MSDE is actively working to increase the number of students who complete these programs. MSDE provided grants to school systems to expand apprenticeship programs and supported building awareness and promoting apprenticeship opportunities in school systems. For example, MSDE supported “Signing Days” for students and created videos to promote apprenticeships statewide.<sup>85</sup> Additionally, to increase the number of industry credentials, MSDE has expanded the number of available credentials that students can earn, facilitated grant programs that support preparation and administration of credential exams, and developed work-based learning data dashboards to share work-based learning participation, wages, student preparedness, and employer satisfaction. MSDE has also recently launched its Maryland Leads grant program that enables local education agencies to access grant funds to build and expand apprenticeship programs.<sup>86</sup>

To complement MSDE’s ongoing internal efforts, The Blueprint for Maryland’s Future creates a new CTE Committee for Maryland within the Governor’s Workforce Development Board. The CTE Committee has a goal of further integrating the labor market and individual employers in the state with the development of a statewide framework for CTE that prepares students for employment in a diverse, modern economy. The State Superintendent of Schools will be an active member of the CTE Committee and MSDE will continue to work with all stakeholders to ensure that Maryland has a robust CTE system that works for all entities involved.

## CASE STUDIES

### TranZed Academy for Working Students (TAWS) – Montgomery County, MD

The TranZed Academy for Working Students (TAWS) program helps working high school students prepare for life after graduation through flexible school schedules and career coaching. The program is designed to build on a student’s strengths while turbocharging their career path. TAWS builds students’ academic programs and schedules around their jobs and career goals. For example, students take high school and college courses in person and online. This flexibility gives them the opportunity to work more hours and earn more money. In addition, each participant works one-on-one with a career coach to design Individual Career Plans (ICPs).<sup>87</sup>

TAWS is built on several pillars. These include:

- Flexible study options and scheduling, including online, face-to-face, early college classes, or a combination

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<sup>83</sup> Comprehensive Review of Standards, Credits, and Credentials for CTE Each Program of Study. MSDE.

[https://www.marylandpublicschools.org/programs/Documents/CTE/CTE\\_Programs\\_of\\_Study.pdf](https://www.marylandpublicschools.org/programs/Documents/CTE/CTE_Programs_of_Study.pdf)

<sup>84</sup> Maryland Career and Technical Education Four-Year State Plan. MSDE.

[https://marylandpublicschools.org/programs/Documents/CTE/PerkinsV/Resources/MD\\_PerkinsV\\_4yrStatePlan.pdf](https://marylandpublicschools.org/programs/Documents/CTE/PerkinsV/Resources/MD_PerkinsV_4yrStatePlan.pdf)

<sup>85</sup> Empowering the Workforce of the Future. MSDE. [https://marylandpublicschools.org/programs/Pages/CTE-Programs-of-Study/CTE\\_Videos/Index.aspx](https://marylandpublicschools.org/programs/Pages/CTE-Programs-of-Study/CTE_Videos/Index.aspx)

<sup>86</sup> The Maryland Leads Initiative. MSDE. <https://www.marylandpublicschools.org/MDLeads>

<sup>87</sup> How the TAWS Program Helps Working Students. TranZed Academy for Working Students <https://tranzedacademy.org/how-does-taws-work/>

- Self-paced curriculum for students to learn at their pace
- Career coaching to help students explore and navigate their career options even as they learn and earn
- Assisting students in developing and learning to utilize social capital or the networks of individuals who can help them identify and benefit from education and career opportunities
- On-demand academic support through tutoring
- Support in navigating the complexities of work, school, and relationships as young people become adults

Students are concurrently enrolled at their home high school and in the TAWS program, allowing them to benefit from the education and support services of their home high school and TAWS. These students can take courses to complete their high school diploma in one of three ways: (1) through one of the online education providers approved by the State of Maryland, (2) through face-to-face or online courses at Montgomery College, the county's community college, or (3) by completing the courses face-to-face at their home high school. Given their responsibilities and workloads, the students are provided with more support through TAWS than a traditional high school student might otherwise receive.

### Denver Public Schools

Denver Public Schools has around 20 schools participating in the CareerWise youth apprenticeship program. It has invested more in apprenticeship than other public school systems across the country. The district has a dedicated team focused on the apprenticeship program within DPS's Career and College Success Department. Among other tasks, this team acts as case managers for students in the apprenticeship program, helping them navigate their new schedules. Having a dedicated apprenticeship staff makes it far smoother for DPS students to participate in apprenticeships. Beyond staffing, DPS has invested heavily in youth apprenticeship in terms of scheduling hours. All schools with apprentices in the program have adjusted their schedules, either allowing apprentices to use block scheduling and only come in two or three days a week or allowing students to use to whole afternoons for their apprenticeship. The district has worked to ensure students can fit core classes into this compressed schedule. The investment on behalf of DPS, as well as CareerWise's close partnership with the schools, has allowed it to scale the program. CareerWise has more than 90 apprentices across the DPS district.<sup>88</sup>

### Switzerland

The Swiss "dual" vocational education and training (VET) system is recognized around the world as a model for integrating workplace and academic training. The upper secondary system serves 70 percent of young Swiss people and enjoys strong support from employers across the country.<sup>89</sup> The established Swiss model of apprenticeship works well because of Swiss investment and belief in the apprenticeship system—all parts of society from government to business to education are involved, and there is general recognition that apprenticeship is a quality route to careers. Approximately 240 apprenticeship occupations exist, and over 40 percent of companies participate.<sup>90</sup>

Most VET programs are of the dual-track variety, i.e. training content is divided between different learning locations (part-time classroom instruction at a vocational school, part-time workplace training at a host company and for some occupations also branch courses at a branch training center). The school-based variety of VET program (i.e. full-time classroom instruction, no apprenticeship) is less common in Switzerland. Tertiary-level professional education also combines classroom instruction with work-based training, thereby ensuring a smooth transition from dual-track VET programs.

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<sup>88</sup> Katz, Batia, and Diana Elliott. 2020. *CareerWise: Case Study of a Youth Apprenticeship Intermediary*. Washington, DC: The Urban Institute.

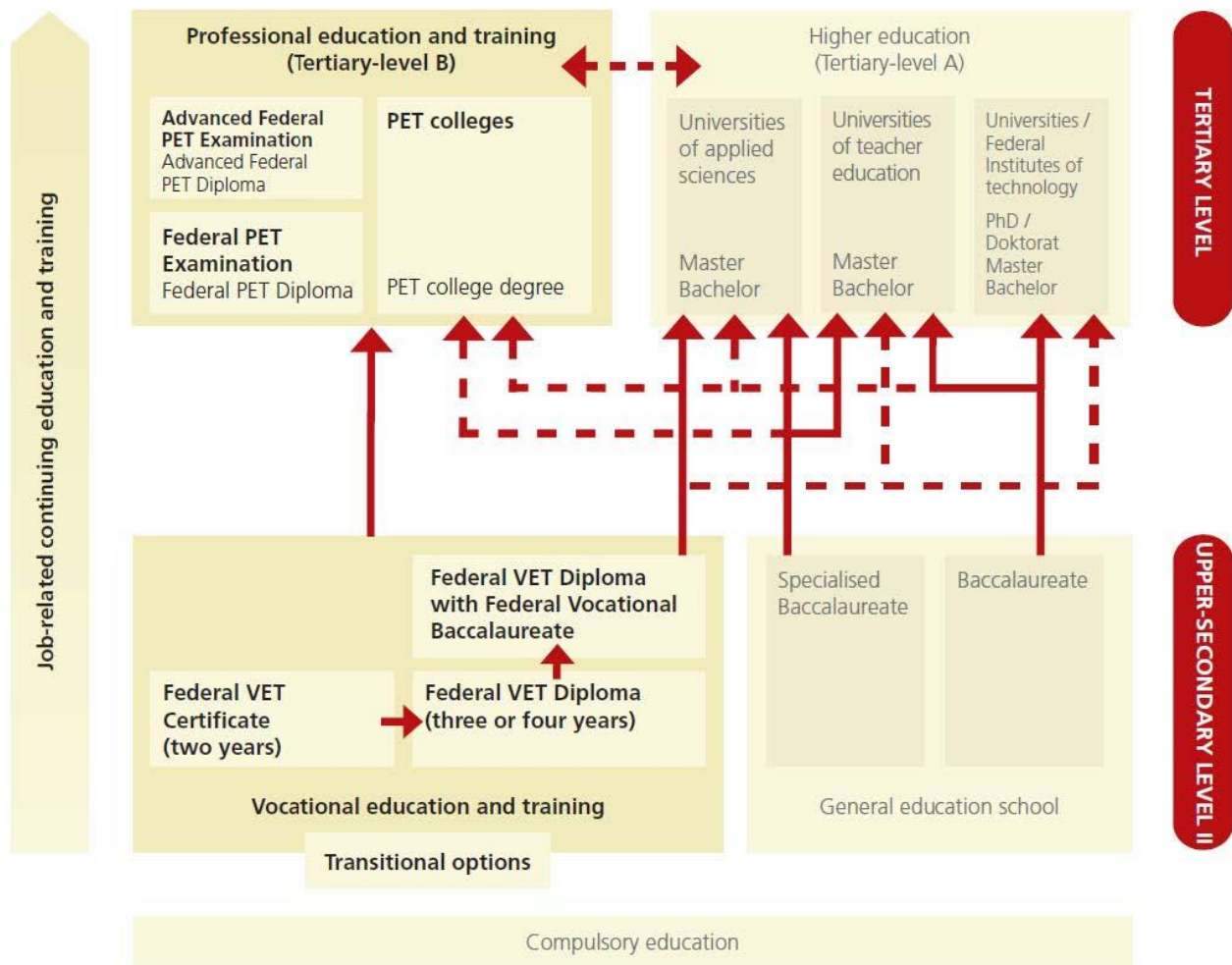
<sup>89</sup> Swiss vocational education and training model: the recipe for success? Ashley Musseau. EHL Insights. <https://hospitalityinsights.ehl.edu/swiss-vocational-education-training-model>

<sup>90</sup> Katz, Batia, and Diana Elliott. 2020. *CareerWise: Case Study of a Youth Apprenticeship Intermediary*. Washington, DC: The Urban Institute.



The Swiss VET model also has such a strong track record of success as all of the participants are able to see and realize the benefits very quickly. The employers have a strong talent pool who have been trained in that company's specific methods and the apprentices earn money and have a near guaranteed full-time job after completing the apprenticeship. The number of apprentices hired by any one company will fluctuate based on the anticipated need in the coming years. This means that students are only trained in occupations with available opportunities. However, when the training program and the employers are more separated as they are in the United States, there can be a larger disparity between the industries that students are trained for, and the industries with job openings. To effectively implement apprenticeships at a large scale, there should be coordination between schools and employers.<sup>91</sup>

Figure 25: Swiss Education VET System<sup>92</sup>



<sup>91</sup> Diana Elliott, Batia Katz. Three Lessons from the Swiss Apprenticeship Model to Inform Our Post-COVID-19 Recovery. July 20, 2020. Urban Institute. <https://www.urban.org/urban-wire/three-lessons-swiss-apprenticeship-model-inform-our-post-covid-19-recovery>

<sup>92</sup> Nancy Hoffman and Robert Schwartz, "Gold Standard: The Swiss Vocational Education and Training System" (Washington, DC: National Center on Education and the Economy, 2015).



## Section 5: Student Support Pathway

*The Blueprint* builds a vision of a school environment where any student who needs additional supports beyond the standard instructional expectations has access to and benefits from these supports as much as necessary. A major component of these additional supports is the Support Pathway for 11th and 12th grade students who have not yet demonstrated readiness for college and career. These students will receive appropriate individualized services, support, and instruction, which may include culturally responsive lessons, a project-based and problem-based pedagogy, and varied instructional timing. As soon as possible and before graduation, these students will have another opportunity to demonstrate their CCR abilities and move from the Support Pathway to a Post-CCR Pathway.

Collaboration between the school system and community colleges shall result in the development and implementation of a program of study in the 11th and 12th grade for each student who has not demonstrated progress in meeting the CCR readiness standard by the end of 10th grade. Each program of study must consider:

- An Individualized College and Career Readiness Plan that outlines expectations for students in meeting the CCR Standard
- A team of teachers charged with monitoring student progress toward CCR readiness
- A meeting with parents or guardians to plan for student success by providing public and private resources to support student success
- Courses that provide students with opportunities for applied, experiential, and engaging opportunities to meet the CCR standard in mathematics and English
- An opportunity to reassess to determine CCR readiness as soon as possible and before graduation.

As school systems prepare to implement College and Career Readiness supports for students who have yet to achieve CCR, it is essential to maintain and provide all the services in compliance with state and federal law. It is also important to consider student service group populations, including special education, English learners, and students who attend schools that receive Title I, Part A funds. Title I, Part A (Title I) of the Elementary and Secondary Education Act, as amended by the Every Student Succeeds Act (ESSA) provides financial assistance to local educational agencies (LEAs) and schools with high numbers or high percentages of children from low-income families to ensure that all children meet challenging academic standards.

*The Blueprint* sets the expectation that all students who have not yet met the CCR Standard by the end of their 10<sup>th</sup> grade year be enrolled in an extended curriculum with alternative approaches tailored to their respective needs. Currently, MSDE is researching effective structures for summer immersion programs; before, during, and after school tutoring models; extended curriculum classes to be developed in consultation with the community colleges; and other innovative modes of delivery for non-CCR students. This research will enable MSDE to provide clear and actionable guidance for LEAs on how best to meet the needs of students not yet CCR at the end of 10th grade. These interventions must be supported by research and aligned with legal and educational requirements. The opportunities provided to each student to achieve CCR will vary based on factors such as:

- If the student is not CCR in one or both of the subjects
- If the student is successful with their first intervention or requires subsequent intervention
- If the student achieves CCR in one subject after intervention but still requires more intervention in the other subject
- If the student is assessed in the winter, spring, or summer administration of the CCR assessments
- If the student is demonstrating or meeting the credit requirements for graduation

### EVIDENCE-BASED SUPPORTS AND STUDENT SCENARIOS

Many options for high school course progressions can be developed based on each student’s individual needs. These course progressions can also be used when contemplating similar structures for elementary and middle school students preparing for high school. To that end, MSDE has collaborated internally and with school system partners to offer scenarios of Student Support Pathways. These examples are not exhaustive, and many students will follow other course progressions not detailed in this report. Below are some options for schools and school systems to consider.

#### Possible Student Support Pathway 1:

**Scenario:** The student does not pass the Algebra I assessment in 9th grade or the Geometry or English 10 assessments in 10th grade. A recommendation could be:

- The student is provided with an Individualized College and Career Readiness Plan that outlines what the student needs to do to meet the CCR standard. The student is provided the opportunity to enroll in summer immersion classes. Summer immersion classes are centered around project-based or problem-based learning. The student is also able to take elective classes over the summer. Testing will need to be provided at the end of the summer immersion course to determine the extent to which the student has made progress toward meeting the CCR standard.
- Throughout, a team of teachers is charged with monitoring student progress toward CCR using summative and formative assessment metrics aligned with the content standards.
- Meetings throughout the process take place with parents/guardians, teachers, and students to plan for public and private resources to support student success.

Student Support Pathway 1	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	Summer	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English 9	English 10	English PBL Immersion	English 11	English 12
Math	Algebra I	Geometry	Math PBL Immersion	Algebra II	Elective
Science	Biology	Chemistry		Physics	Elective
Social Studies	US History	US Government		World History	Psychology AP
Elective	World Language	World Language	Elective	Computer Science	Computer Science AP
Elective	Health/PE	Fine Arts		Elective	Technology

**Outcome:** At the end of the summer immersion program, the student passes the English 10 and Algebra II assessments, meeting the CCR standard.

**Possible Student Support Pathway 2:**

**Scenario:** The student does not pass the Algebra I assessment in 9th grade (or the Geometry assessment) but does pass the English 10 assessment in 10th grade. A recommendation could be:

- The student is provided with an Individualized College and Career Readiness Plan that outlines what the student needs to do to meet the CCR standard. The student is provided the opportunity to enroll in summer immersion classes. Summer immersion classes are centered around project-based or problem-based learning. The student is also able to take elective classes over the summer. Testing will need to be provided at the end of the summer immersion course to determine the extent to which the student has made progress toward meeting the CCR standard.
- Throughout, a team of teachers is charged with monitoring student progress toward CCR using summative and formative assessment metrics, aligned with the content standards.
- Meetings throughout the process take place with parents/guardians, teachers, and students to plan for public and private resources to support student success.

Student Support Pathway 2	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	Summer	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English 9	English 10		English 11	English 12
Math	Algebra I	Geometry	Math PBL Immersion	Algebra II	Elective
Science	Biology	Chemistry		Physics	Elective
Social Studies	US History	US Government		World History	Psychology AP
Elective	World Language	World Language		Computer Science	Computer Science AP
Elective	Health/PE	Fine Arts		Elective	Technology

**Outcome:** At the end of the summer immersion program, the student passes the mathematics assessment, meeting the CCR standard.

**Possible Student Support Pathway 3:**

**Scenario:** The student passes the English 10 assessment but does not pass the Algebra I or Geometry assessments. The student does not elect to enroll in summer courses. The student does not pass the Algebra I assessment in 9th grade or the Geometry or English 10 assessments in 10th grade. A recommendation could be:

- Student is provided with an Individualized College and Career Readiness Plan that outlines what the student needs to do to meet the CCR standard. The plan enrolls the student in after school tutoring during the 11th grade. Testing will need to be provided at the end of the summer course.
- A team of teachers is charged with monitoring student progress toward CCR.
- A meeting with parents or guardians takes place to plan for student success by providing public and private resources to support student success.

At the end of the 11th grade, the student passes the English 10 and Algebra II assessments, meeting the CCR standard.

Student Support Pathway 3	MEET CCR STANDARD			
	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English 9	English 10	English 11 AP	English 12 AP
Math	Algebra I	Geometry	Algebra II	Math Elective
Science	Biology	Chemistry	Physics	Science Elective
Social Studies	US History	Us Government	World History	Economics AP
Elective	World Language	World Language	Elective	Elective
Elective	Health/PE	Fine Arts	Technology	Elective
			Math Tutoring	

**Outcome:** The student is required to participate in an after-school tutoring program at least two days a week. At the end of the 11th grade, the student passes the English 10 and Algebra II assessments, meeting the CCR standard.

**Possible Student Support Pathway 4:**

**Scenario:** The student does not pass the Algebra I course in 9<sup>th</sup> grade and the English 10 course in 10<sup>th</sup> grade. The student retakes these courses during the next year, which extends their high school career beyond four years to meet graduation requirements. At the end of the 10<sup>th</sup> grade, the student is determined to be not college and career ready (CCR) in mathematics and English.

- Student is provided with an Individualized College and Career Readiness Plan that outlines what the student needs to do to meet the CCR standard. The student elects not to enroll in summer coursework or stay after school for academic tutoring, thus the student receives support with explicit instruction during the school day. This support can take different forms, including project-based learning, tutoring (one-to-one or small group), or a scheduled class. There must be instruction to address the student’s specific area of weakness impacting the ability to meet the CCR standard. An individualized plan (e.g., IEP) will be designed to prepare the student for success in meeting the CCR standard(s).
- A team of teachers is charged with monitoring student progress toward CCR.
- A meeting with parents or guardians takes place to plan for student success by providing public and private resources to support student success.

Student Support Pathway 4	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade	12 <sup>th</sup> +
	<b>English</b>	English 9	English 10	English 10 (retake)	English 11
<b>Math</b>	Algebra 1	Algebra 1 (retake)	CCR Mathematics	Geometry	Statistics
<b>Science</b>	Biology	Chemistry	Physics	Science Elective	Science Elective
<b>Social Studies</b>	US History	US Government	World History	Carpentry I	Carpentry II
<b>Elective</b>	Health/PE	Elective Study Skills/Enrichment	CCR English Support	CCR Support or Elective	Elective
<b>Elective</b>	Financial Literacy	Technology	Fine Arts	Construction Core	Work-based learning

MEET CCR STANDARD

**Outcome:** at the end of the 12th grade, the student passes the English 10 and geometry assessments, meeting the CCR standard.

**Possible Student Support Pathway 5:**

**Scenario:** A CTE student is not CCR ready at the end of 10th grade in either mathematics or English.

- Student is provided with an Individualized College and Career Readiness Plan that outlines what the student needs to do to meet the CCR standard. The student enrolls in summer coursework but does not reach CCR at the conclusion of the courses. In the 11th grade, the student accesses after school academic tutoring.
- A team of teachers is charged with monitoring student progress toward CCR.
- A meeting with parents or guardians takes place to plan for student success by providing public and private resources to support student success.

Student Support Pathway 5	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	Summer	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
	<b>English</b>	English 9	English 10	English Immersion	English 11
<b>Math</b>	Algebra I	Geometry	Math Immersion	Algebra II	Elective
<b>Science</b>	Biology	Chemistry		Physics	Elective
<b>Social Studies</b>	US History	US Government		World History	
<b>CTE</b>	CTE Course 1	CTE Course 2	CTE Work-based Learning	CTE Course 3	CTE Work-based Learning
<b>Elective</b>	Health/ PE	Fine Arts		Computer Science	CTE Work-based Learning
				English Tutoring	
				Math Tutoring	

MEET CCR STANDARD

Outcome: Student achieves CCR readiness at the end of 11th grade.

## STUDENT POPULATIONS

In addition to the pathways discussed above, certain student populations are entitled to and will benefit from additional supports and services.

### Special Education

Under the Individuals with Disabilities Education Act (IDEA), eligible students with disabilities are entitled to a free appropriate public education (FAPE). The local education agency is responsible for convening an Individualized Education Program (IEP) planning team to develop an educational program, including special education and related services designed to meet the unique needs of the individual student. The IEP process involves individual student data collection and analysis, program design and implementation, and progress monitoring to ensure the student has access to the general education curriculum and standards.

As local education agencies implement the new CCR standards and assessments, they should consider ways in which to build the CCR support pathways into the IEP process for eligible students. For example, data from the CCR assessment and formative assessment measures should be included in the student's present level of academic achievement and functional performance. This information will inform the development of the student's IEP goals and objectives, which moves the student toward meeting CCR standard. IEP teams will develop individual goals including those that address grade level standards to narrow the learning gap.

The IEP provides specially designed instruction, which includes accommodations, assistive technology needs, adaptations to general education instruction, supplementary aids and services, program modifications, and supports for personnel and families that enable the student to make meaningful progress on goals and in the general education curriculum.

The IEP team should use the evaluation and progress monitoring tools continuously (e.g., benchmark assessments, formative assessments, summative assessments, standardized assessments, etc.) to determine the student's progress and to identify any gap between the student's academic performance and the CCR standards. This allows the IEP team to make early and appropriate changes to the student's IEP.

Critical to the effective development, implementation, and evaluation of an IEP is a comprehensive school-wide Integrated Tiered System of Academic and Behavioral Supports that includes:

- Efficient and effective collaborative teaming structures for general and special educators and related service providers
- Data systems that range from formative assessment to universal screening and robust progress monitoring to inform instructional decisions
- Adoption and implementation of evidence-based instructional and intervention practices to provide specially designed instruction to students with disabilities, with fidelity, to narrow school readiness and achievement gaps
- Inclusive educational opportunities, including access to general education curriculum and nondisabled peers
- Parental engagement in the IEP process, including Secondary Transition Planning, where the parent is supported in active and informed decision-making that contributes to their child's success
- Professional learning and coaching with monitoring for fidelity of implementation of practices

MSDE provides guidance to local education agencies on applications of a system of instruction and support research on the impact of learning the core curriculum in general education classes, supplemented by interventions and specially designed instruction.

Students with disabilities must be provided with equal access to the educational environment, including the support pathways offered to all students. In order to ensure equal access and meaningful participation, the local

education agency must provide students with disabilities with the accommodations, modifications, and related services included in their IEP or Section 504 Plan. This includes transportation if the student requires it as a part of the IEP/Section 504.

### English Learners

Students who are identified as English learners (EL) are required to receive English language development (ELD) instruction to address their English language proficiency development. ELs also need to meet the same challenging academic standards that all students are expected to meet. It is imperative that educators working with ELs understand the English language proficiency levels of their students. This allows educators to individualize instruction based on the unique needs of ELs. English learners who have not met the CCR standard may benefit from the following instructional strategies:

- Use home language to clarify key concepts
- Access prior knowledge and build background knowledge
- Use visual support and a variety of scaffolds to increase comprehensibility
- Incorporate hands-on or project-based learning
- Provide additional wait and processing time
- Build in intentional opportunities for interaction
- Use a variety of assignments and assessment tools aligned to language proficiency levels

Using bilingual instruction and assessment is an additional opportunity for customizing instruction for English learners.

Additional information on supporting ELs is available in MSDE's Workgroup on English Learners in Public Schools Interim Report.<sup>93</sup>

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<sup>93</sup> MSDE's Workgroup on English Learners in Public Schools Interim Report.  
<https://www.marylandpublicschools.org/Blueprint/Documents/Reports122021/ELWorkgroupInterimReport.pdf>



## Section 6: Early Warning Indicators

A crucial design principle within *Blueprint* is to identify students who are not on target to meet the CCR standard on time and identify which students will need additional support prior to the administration of the CCR assessment for mathematics and English.

*The Blueprint* requires that students in middle and high school who are not progressing toward CCR must be:

- Enrolled in an extended curriculum with alternative approaches embedded into the coursework that are tailored to a student's specific circumstances
- Allowed to transition out of the extended curriculum if their progress toward CCR accelerates

To ensure the accurate and ongoing identification of students in need of assistance, school systems must construct systems to aggregate data that assist in the early identification of students who are not on track to be CCR in mathematics and/or English by the end of 10th grade. This data should be curated and examined beginning in elementary school, continued in the middle grades, and utilized in 9th grade to align students' needs with a path to CCR readiness. Research<sup>94</sup> from multiple sources<sup>95</sup> indicates that data collected should include, but not be limited to:

- Daily attendance
- Performance on interim assessments aligned to the CCR standards in mathematics and English for each grade level
- Performance on the Kindergarten Readiness Assessment (KRA)
- Course grades (particularly in middle and high school)
- Credits progression toward graduation at the end of ninth grade<sup>96</sup>

### EARLY WARNINGS IN ELEMENTARY AND MIDDLE SCHOOLS

MSDE advocates that monitoring of early warning signs in English language arts and mathematics begin as early as kindergarten. MSDE research comparing the KRA and PARCC grade 3 data in Maryland demonstrates that students at the end of grade 3 PARCC were exhibiting the same areas of risk in reading and mathematics as they did on the KRA upon entering kindergarten. Using the KRA as a baseline, further data from elementary school should focus on English language arts and mathematics. Research has shown that early literacy has a significant relationship to graduation rates across a variety of contributing factors. The Annie E. Casey Foundation (2010) conducted a long-term study that showed students who were not proficient in reading by the end of third grade were four times more likely to drop out of high school than proficient readers.<sup>97</sup> If students are not proficient readers when they begin fourth grade, as much as half of the curriculum will be incomprehensible.

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<sup>94</sup> College and Career Readiness Early Warning System (CCREWS). Wisconsin Department of Public Instruction. <https://dpi.wi.gov/ews/college-career-readiness>

<sup>95</sup> Evidence-Based Practices to Support College and Career Readiness in High School. Early Warning Indicators. College & Career Readiness & Success Center At American Institutes For Research. [https://ccrcenter.org/sites/default/files/EvidenceBasedPractices\\_EarlyWarningIndicators.pdf](https://ccrcenter.org/sites/default/files/EvidenceBasedPractices_EarlyWarningIndicators.pdf)

<sup>96</sup> Allensworth, Elaine and Easton, John (2005). The On-Track Indicator as a Predictor of High School Graduation. <https://consortium.uchicago.edu/publications/track-indicator-predictor-high-school-graduation>

<sup>97</sup> Annie B. Casey Foundation (2010). Early Warning! Why Reading by the End of Third Grade Matter. Retrieved: [https://assets.aecf.org/m/resourcedoc/AECF-Early\\_Warning\\_Full\\_Report-2010.pdf](https://assets.aecf.org/m/resourcedoc/AECF-Early_Warning_Full_Report-2010.pdf)

## English Language Arts

Early warning indicators for students in English language arts start with screening for reading difficulties beginning in kindergarten. Students in Maryland are required to be screened for reading difficulties beginning in kindergarten and through grade 3. Students at Risk for Reading Difficulties with the Ready to Read Act requires local education agencies screen students in foundational reading skills through grade 3. Students who are determined to be at risk for reading difficulties must be provided evidence-based, supplemental reading instruction during the school day to address the student's identified areas of need. Local education agencies may revise supplemental instruction based upon progress monitoring and the student's placement in an appropriate multi-tiered system of support, and the local education agency shall set an individualized review schedule of the supplemental reading instruction for each student at intervals of not more than 30 days for progress monitoring. The school system may determine that the supplemental instruction plan is completed when the student has achieved grade-level reading standards based upon age-appropriate re-screening.

At the end of grade 3, districts should begin to use the Maryland Comprehensive Assessment Program (MCAP) test score as an early warning sign for students who may not be on-track for college and career readiness. These scores can be used as a "first look" to determine which students may need further assessment and supplemental instruction. A diagnostic assessment should be given to any student determined "at-risk" on MCAP testing, followed by targeted acceleration. Students who have specific instructional areas of risk should be placed into a multi-tiered system of support that addresses specific areas of need. Currently one of the most promising means of intervention for students who are not on track is the use of well-structured supplemental instructional programs. *The Blueprint* mandates that specific transitional education services be provided to struggling learners at the school level and significant per-pupil funding support this program. Transitional supplemental instruction includes one-on-one and small-group tutoring of not more than four students with a certified teacher, a teaching assistant, or any other trained professional; cross-age peer tutoring; and screening, identifying, addressing, and targeting specific areas of need.

## Mathematics

Early Warning Indicators for students in grades K-8 mathematics include unsatisfactory grades in the grade-level mathematics class and a score of 1 or 2 on the grade-level MCAP Mathematics assessment. A student's ability to learn grade-level mathematics is dependent on their level of proficiency with the skills and understandings from previous mathematical content. Future success in mathematics is dependent on the appropriate intervention taking place at the first sign of struggle. Failure to provide additional support when a student displays one of the "Early Warning Indicators" is likely to result in challenges in all subsequent mathematics coursework. Currently, there are no consistent practices across the state to address this issue. Local education agencies should be required to provide Transitional Supplemental Instruction to students who display Early Warning Indicators.

Students who have been screened or are struggling at the end of grade 5, should be reevaluated for specific areas of need. If the intervention does not meet the student's diagnosed area of weakness, the intervention will be ineffective. Once the student has been screened and diagnosed, a grade-appropriate and evidence-based program should be implemented. If a student is demonstrating weakness in foundational skills, an intervention program must be provided that focuses on an explicit, structured approach for acceleration of learning. If the student is demonstrating weaknesses in comprehension, an evidence-based reading program designed for middle and high school students should be implemented. If students demonstrate weaknesses in both areas, both supplementary instructional approaches should be provided in a multi-tiered system of approach.

The incorporation of early warning indicators from the KRA, through mathematics and English/language arts performance in elementary and middle school will provide quick and actionable information of which students are on track to be CCR by the end of 10th grade without any major support or adjustments and who need additional support. For those students who are not meeting these on-track indicators, focusing on actionable conversations with students as well as identifying systemic trends allows schools to intervene and get students on track.

## EARLY WARNING INDICATORS FOR HIGH SCHOOL

### Case Study: Chicago Public Schools

Research has shown that while a student is in high school, the most predictive indicators of high school and college success are school attendance, course grades, and credit attainment. Chicago Public Schools has had the same ninth grade on-track indicator – which looks at only course grades and credit attainment – in place for the past 20 years. Chicago students on-track in 9th grade graduated high school in four years at a rate of 81%; only 22% of students off-track in 9th grade were able to graduate high school in four years. This impressive predictability was not matched with any test score or other standardized measure.<sup>98</sup>

### Implementing Early Warning Indicators in Maryland

These early warning indicators provide quick and actionable information of which students are on track to graduate without any major supports or adjustments. For those students who are not meeting these on-track indicators, focusing on actionable conversations with students as well as identifying systemic trends allows schools to intervene and get students back on track. Another major predictor of high school success is a student's school attendance rate. Students who missed more than 10% of their 9th grade year were less likely to graduate on time. This indicator can also be looked at over shorter intervals such as monthly, quarterly, or semester attendance for more real time information. Poor attendance for a student may be an indicator of competing responsibilities or priorities outside of school or a general disengagement from school. If a student has poor attendance because of any of these reasons, the issues may be helped through systemic culture changes, individual check-ins with the student, or sustained individual attention and appropriate social and community supports; however, if a school does not value and prioritize these indicators, the staff may overlook the opportunities to assist the student.<sup>99</sup>

Another commonly used early warning indicator is a student's behavior as defined by office discipline referrals, suspensions, detentions, or classroom behavior grades or marks. The use of behavior data as an early warning indicator has had mixed results due to low predictability of high school graduation as well as inherent difficulties in the data collection and analysis of behavior related activities. Behavioral data is often defined and collected differently in one school compared to another, both in official policy as well as on the ground practical implementation of that policy. Disciplinary actions are also applied disproportionately across different race and ethnic groups as well as genders. These issues complicate the use of behavior data in any systemic manner.<sup>100</sup>

*The Blueprint* details that Maryland must implement a ninth-grade tracker system that mirrors Chicago Public School's ninth grade on-track indicator before the start of the 2022-2023 school year. This tracker is supported by Research conducted by the US Department of Education (2016) regarding early warning signs for high school graduation<sup>101</sup>. The tracker required by *The Blueprint* must measure each student's progress toward graduating on time including credit accumulation. The outcomes of the tracker must be reported to MSDE. MSDE will report results to the Accountability and Implementation Board (AIB) and the Maryland Longitudinal Data System Center. Currently the Maryland High School Report Card includes two metrics associated with "Readiness for Post Secondary Success." One of the metrics is the on-track in 9th grade measure. This measure is the percentage of 9th grade students earning at least four credits in any of the following:

- English language arts
- Mathematics

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<sup>98</sup> The On-Track Indicator as a Predictor of High School Graduation. Elaine M. Allensworth. Consortium on Chicago School Research at the University of Chicago. 2005. <https://consortium.uchicago.edu/sites/default/files/2018-10/p78.pdf>

<sup>99</sup> Evidence Based Resources for Keeping Students on Track to Graduation. The George Washington University Center for Equity & Excellence in Education. January 2012. [https://www.lacoe.edu/portals/0/schoolimprovement/1\\_graduation\\_evidence\\_based\\_resources.pdf](https://www.lacoe.edu/portals/0/schoolimprovement/1_graduation_evidence_based_resources.pdf)

<sup>100</sup> Allensworth, E.M., Nagaoka, J., & Johnson, D.W. (2018). High school graduation and college readiness indicator systems: What we know, what we need to know. Chicago, IL: University of Chicago Consortium on School Research

<sup>101</sup> Issue Brief: Early Warning Systems (2016). <https://www2.ed.gov/rschstat/eval/high-school/early-warning-systems-brief.pdf>

- Science
- Social studies
- World language

While school systems in Maryland are required to collect this information, there are no other specific required actions when it is discovered that a student is not “on-track.” The measure is also not currently used to identify and support students, which is partly due to the original intent to be aggregated to the school level and used for school accountability. Although the measure was constructed with the best available data at the time, it does not include key research-backed components such as course failure (beyond earning credit) and attendance. A comprehensive early warning system would build on data infrastructure and buy-in already present for the on-track in 9th grade measure and also include additional data points and a process for using the measure for identifying and supporting individual students.

In early 2022, MSDE formed an internal workgroup to study best practices across the country and existing early warning systems in Maryland’s school systems, as well as to develop a process for collecting the required data and to provide guidance to school systems. The workgroup surveyed systems on their progress on a grade 9 on-track indicator and met with three Maryland school systems to discuss their existing early warning systems. The grade 9 on-track indicator will be incorporated into the High School Data Collection for Fall 2022, based on data from the 2021-2022 school year. School systems will also report to MSDE on the components of their indicator. Based on the results of current LEA definitions, other conversations with relevant stakeholders, and best practices, the workgroup will study and recommend a standard definition of on-track in grade 9 to be implemented statewide in the 2022-2023 school year. This guidance will be shared with LEAs to ensure that all students have access to a system that supports progress toward CCR.

## **SPECIAL EDUCATION**

For students with disabilities served through an Individualized Education Plan Program (IEP), early warning indicators that may impact a student's progress toward CCR should be discussed at least annually as part of the annual IEP Team meeting. Early warning indicators may include:

- Inconsistent/Poor attendance
- Behavior that impacts classroom engagement and learning
- Poor/Limited academic performance
- Poor/limited performance on Formal and informal assessments
- Lack of healthy social and emotional functioning
- Lack of progress in IEP goals and objectives, or the student progressing at a rate which is less than anticipated leading to an increasing gap between performance and grade-level expectations

If IEP progress monitoring (including monitoring of early warning indicators) demonstrates that a student is not on track to meet their goals, the IEP team should convene an IEP meeting to review the IEP and consider whether the student needs new, additional, or different accommodations, modifications, goals/objectives, specially designed instruction, or related services in order to achieve meaningful progress toward college and career readiness.

## **ENGLISH LEARNERS (ELs)**

School systems should understand that ELs who are still developing English proficiency may appear as “not on target” for CCR based on conventional data. Crucial data points that should be examined to determine CCR for ELs are WIDA ACCESS scores and the growth-to-target path. Growth-to-target path is a strong indicator that the student is adequately developing English language proficiency to be successful in an academic setting. To avoid

mis- or over- identification of ELs for additional instructional support that may not be linguistically appropriate, educators and school systems should consider the factors below and when making decisions on CCR.

- EL status (active, reclassified, or refused)
- Native language literacy
- Interrupted schooling
- Trauma and/or social emotional needs
- Age
- Time in US schools
- General education experience

### **TITLE I, PART A**

To determine if additional instructional and social emotional supports are necessary for students in Schoolwide and Targeted Assistance Title I schools, educators should be familiar with the following factors:

- Use of a needs assessment and multiple criteria processes to determine CCR and to identify those students who have the greatest need
- The age, maturity, grade level, abilities, interests, growth, and health of students as a driver for the selection of the schoolwide reform strategies
- Support to address the symptoms resulting from trauma or social emotional needs that can directly impact a student's ability to learn.
- Selection of instructional materials and strategies that are based upon evidence with proven efficacy in coordination with the local curriculum and instruction and research departments/offices

## Section 7: Finance and CCR

The Blueprint for Maryland's Future mandates the appropriation of State and Local Funds for all 11th and 12th grade students, to help implement College and Career Readiness programming. The Blueprint does so through two of the Blueprint Formula's Major Aid Categories: The target per-pupil foundation amount and the Post-College and Career Readiness per-pupil program amount. The target per-pupil foundation amount is designed to provide approximately \$500 for each student in grades eleven and twelve who has not yet met the CCR standard. The Post-CCR per-pupil eligible students, who are students who achieved the CCR standard, generate approximately \$1,000 per student.

### Funding for Non-CCR Ready 11th and 12th Graders

MSDE calculates the target per-pupil funding using the formula articulated in the Maryland Education Article, §5-201(f). The Kirwan Commission's 2019 interim report<sup>102</sup> identified \$500 per-pupil as the target amount for 11th and 12th graders who are not CCR ready. The enacted Blueprint legislation states: "The target per-pupil foundation amount includes costs associated with implementing the Blueprint for Maryland's Future including [...] Instructional opportunities for students who are college and career ready and those who are not." The target-per-pupil foundation amount in the Blueprint formula accomplishes this funding level through the inclusion of an additional \$73 per-pupil for all students K-12. Given the ratio of K-10 students to 11th and 12th grade students, this amount was calculated to equate to \$500 per qualifying 11th and 12th grade pupil. The pro-rated equivalent amount in enacted Blueprint Statute in FY 23 is \$295 for every student in grades 11 and 12, but the Blueprint target foundation amount phases in over the course of the legislation.

Table 26

Recommended Formula Components	Kirwan Commission Recommendations	Actual Amount FY23*
FY 2020 Per-Pupil (Less Blueprint Cost Savings)	\$7,137.00	\$7,137.00
Increased Teacher Salary (Does Not Include Career Ladder)	\$617.00	\$359.00
Cost of Teacher Collaborative Time	\$1,151.00	\$670.00
Principal Career Ladder	\$8.00	\$5.00
Behavioral Health Increase	\$4.00	\$2.00
<b>College and Career Ready (CCR)/Non-CCR Base**</b>	<b>\$73.00</b>	<b>\$43.00</b>
Career Counseling***	\$58.00	\$34.00
Maintenance and Operations Increase	\$97.00	\$56.00
Supplies and Materials for New Teachers	\$6.00	\$3.00
<b>Per-Pupil Total</b>	<b>\$9,150.00</b>	<b>\$8,310.00</b>

\*Amounts are pro-rated based on the share of the foundation amount recommended in the Kirwan Commission's final report.

\*\*These funds are designed specifically for students in grades 11 and 12. Since \$73 goes to all students as part of the foundation, the Commission calculated \$73 per student as the equivalent of \$500 for every student in grades 11 and 12. The pro-rated equivalent amount in enacted Blueprint Statute is \$295 for every student in grades 11 and 12.

\*\*\*Equivalent of one career counselor in every middle school/high school based on median school sizes.

<sup>102</sup> Maryland Commission on Innovation & Excellence in Education. Interim Report. January 2019.

<http://dls.maryland.gov/pubs/prod/NoPblTabMtg/CmsnInnovEduc/2019-Interim-Report-of-the-Commission.pdf>

The individual components of the Foundation Program Target Per-Pupil amount are identified in Table 26 and are also articulated in the Maryland Education Article, §5-212. This table shows the total amount of funding, not just the State Share. The second column of Table 26, “Kirwan Commission Recommendations” is a reproduction of a table from the Kirwan Commission's 2019 interim report. The “FY 2020 Per-Pupil (Less Blueprint Cost Savings)” row is the Thornton Commission/Bridge to Excellence base per-pupil minus the Commission's noted per-pupil savings achieved through certain formula efficiencies. In total, the Commission's table shows a recommended increase to the previous base of \$2,013 per-pupil (\$9,150 per-pupil minus \$7,137 per-pupil).

### Funding for CCR Ready Students

MSDE calculates post-CCR per-pupil funding using the formula articulated in the Maryland Education Article, §5-217. The total State Share of CCR State Aid for each Local Education Agency (LEA) is half of the wealth-adjusted CCR program amount, which is the number of CCR-eligible students in the prior school year multiplied by the CCR per-pupil amount. In Fiscal Year (FY) 2023, the per-pupil amount is \$540. Due to the Covid-19 pandemic and unavailable data required to determine which students met the CCR standard in the previous spring, the State used proxy eligibility data for the FY 2023 State Aid calculation. For FY 2023 the number of CCR eligible students is the percent of students meeting CCR from Spring 2019 multiplied by the number of students in attendance in Spring 2021. MSDE will use this proxy again for FY 24 calculation. The FY 25 State Aid calculation will resume using actual prior year CCR standard data. Each year, the per-pupil amount will increase according to the Blueprint Formula's inflation measure.

### CCR Program Costs

The Commission reviewed multiple Post-CCR pathways in developing the cost estimate for the CCR program. These include the International Baccalaureate Programme (IB), the Cambridge International Diploma Program, the Advanced Placement Diploma Program, current Career and Technology Education costs, and the average credit hour cost at Maryland community colleges. Of these pathways, the IB program is the most costly, requiring an annual per school fee in addition to student assessment fees. The Cambridge and AP programs include per student assessment fees, and like the IB program, require students to take a minimum number of courses to be eligible for the diploma. All school systems in Maryland offer dual enrollment programs through the local community college. The average cost of a credit bearing course is \$365, and by law, local education agencies pay at least 75% of that cost, but both the LEA and public institutions of higher education in the State are responsible for ensuring students and families are not made responsible for any tuition costs associated with dual enrollment. According to the Maryland Education Article, §15-127:

- The county board shall pay 75% of the cost of tuition for a State public institution of higher education.
- A public institution of higher education may not charge tuition to a dually enrolled student.
- If there is an agreement before July 1, 2020, between a public school and a public institution of higher education in which the public institution of higher education charges less than 75% of the cost of tuition to a dually enrolled student, the county board shall pay the cost of tuition under the existing agreement.

LEAs and community colleges are responsible for providing an uncapped amount of dual enrollment courses at no cost to the student or the student's family for those students deemed college and career ready. These are the students who meet the CCR standard, which are the same students who generate the related CCR State Aid. Community colleges and LEAs are not responsible for providing access to an uncapped amount of dual enrollment courses at no cost for students who have not met the CCR standard. Notably, Maryland Law currently double funds dual enrollment students to ensure public institutions of higher education and LEAs can meet the dual enrollment cost and course requirements associated with the post-CCR pathway. In addition to the Blueprint resources described herein, the Senator John A. Cade Funding Formula<sup>103</sup> provides State Aid to public institutions of higher education based on Full-Time Equivalent students, which includes dual enrollment students.

<sup>103</sup> Maryland Education Article, §16-305

### **Fund Reporting And Restrictions On Fund Use**

The Blueprint for Maryland's Future requires that the MSDE provide LEA payments for Major Aid Categories in its bi-monthly LEA distributions. Consequently, MSDE will not restrict fund use, which would require LEA submission of budget forms and LEA payments made on a reimbursement basis, not in an automatic distribution of 1/6th of each LEA award each month. However, Maryland Education Article, §5-234 and §5-406 provide mechanisms for the Department to ensure budgeted program spending and actual program spending aligns with the legislative intent of the Blueprint. The statute requires local education agencies to distribute at least 75% of the per-pupil amount for the majority of education aid programs directly to schools, as well as report current and prior-year school-level expenditures each January.



## Section 8: Coordination and Engagement

College and Career Readiness decisions affect nearly all students, educators, and employers in Maryland at each of the primary, secondary, and higher education levels and beyond. MSDE recognizes the need to make sure that the CCR implementation meets the needs of all stakeholders through sustained meaningful engagement and partnerships.

MSDE began its initial engagement around College and Career Readiness with local Superintendents, The Public School Superintendents' Association of Maryland, and local school district staff in the fall of 2021. MSDE shared the current plans and implementation status. The department also engaged in several problems of practice, including implications for higher education; career opportunities for students completing a Post-CCR Pathway; pathway completion requirements (number of courses, etc.), and how and when students should be allowed to switch between pathways if they so choose.

MSDE will continue to collaborate with representatives from local education agencies, students, families, teachers, principals, the newly established CTE committee, the Workforce Development Board, Division of Rehabilitation Services, Developmental Disabilities Administration, Behavioral Health Administration, the Department of Labor, and others.

### COLLABORATION WITH HIGHER EDUCATION IN MARYLAND

Another crucial task to implement the CCR system successfully, especially the Post-CCR Pathways, is to coordinate with the higher education community to align visions of how students should be prepared for college, and how institutions of higher education will continue to ensure student success. Each of the Post-CCR Pathways enables students to earn a credential that should open meaningful doors after high school graduation. These could include the ability to waive remedial or other entry level college courses and to enter into an advanced honors program, or to enter into a certification program for a high-demand industry with a substantial portion of the coursework already completed and recognized. But to make the pathways truly meaningful for students, both the PreK-12 and higher education communities must agree on the impact of the credentials that students earn and what they represent. MSDE collaborates with representatives from the Maryland Higher Education Commission, The University System of Maryland, the Maryland Association of Community Colleges, and other community members. MSDE is committed to developing the structures necessary to allow all Maryland students to succeed during and beyond their public-school careers, including exploring a revitalization of the P-20 Leadership Council of Maryland.

### COLLABORATION TO INFORM STRATEGIC PLANNING

College and career readiness does not start in 9<sup>th</sup> grade, nor end at 12<sup>th</sup> grade. As described elsewhere in this report, for example, MSDE is committed to high quality early warning systems and meaningful Post-CCR Pathways. To enable all student to achieve CCR in 10<sup>th</sup> grade, *The Blueprint* rightfully envisions restructuring of our entire education and early childhood system. Maryland must ensure that students can read by third grade, that families are supported and welcomed into the school, that all students are given access to rigorous grade-level (or above) content that challenges and engages them, that some student groups are not disproportionately pushed out of school via inappropriate discipline policies or practices, and that educators are supported and respected throughout.

To that end, as the State Board of Education and MSDE are developing a strategic plan for public schools in Maryland, consultation, engagement, and stakeholder input will all continue to be front and center. The strategic plan will guide the implementation of *The Blueprint for Maryland's Future*. Everyone is encouraged to complete the Maryland Public Schools Strategic Planning Survey by going to [MarylandPublicSchools.org/Survey](https://MarylandPublicSchools.org/Survey)