The Diploma Dilemma

A POLICY ANALYSIS FROM THE HOOVER EDUCATION SUCCESS INITIATIVE

by Margaret E. Raymond

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MARGARET E. RAYMOND

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Every spring, in front of admiring and proud families, thousands of teenagers don caps and gowns and parade across countless stages to receive their high school diplomas. The high school diploma—the most common academic credential in the United States—is the first major milestone for students. High school graduation is a key status differentiator compared to those who do not attain it. It is the ticket to a notable bump in lifetime wages. It serves as common currency for many entry-level job requirements and is required for many colleges.

Reality, however, belies this rosy description. Despite flat or declining results at fourth or eighth grade on the National Assessment of Educational Progress (NAEP), the rate of students attaining a high school diploma has increased in the United States, rising 6 percentage points between 2011 and 2017.[1] The trend contradicts the flat historical trend of twelfth-grade NAEP results for seventeen-year-olds, suspended in 2013, that showed flat performance over the previous decade. One of two explanations is possible. Either there is a remarkable renaissance happening in high schools or the graduation rates are inflated through changes in requirements, definitions of performance standards, or assessment criteria.

Politicians and policy makers have a keen interest in raising their graduation rates. There is an urgent need to improve the overall base of knowledge and skills among American students who are the future workforce; it is imperative for states to produce college-ready and career-ready graduates. In 2014, the difference in lifetime earnings between a high school graduate and one who did not complete high school was $9,360 per year, but the difference relies crucially on the high school graduate holding a portfolio of knowledge and skills that align with employment or training opportunities.[2] Our national productivity is directly affected by the cognitive capacities students gain in high school. National productivity and international competitiveness hang in the balance.[3] Additionally, mandatory reporting of the "4-year adjusted cohort graduation rate" (ACGR) to the US Department of Education since 2008, later included in the 2015 Every Student Succeeds Act (ESSA), has made the number of degrees conferred concrete and transparent, although the reports are silent on the integrity of the degrees themselves.

The focus of this essay is on the vexing problem of diplomas that are literally and figuratively paper-thin. This holds for students across the board but is particularly true

Diplomas are literally and figuratively paper-thin

for diplomas awarded to low-income students or students of color in historically underserved communities.[4] The diploma carries weight only to the extent that the outward signal—the credential itself—is backed by student accomplishments and outcomes that fully ready the recipients for enriching post-secondary life. The rampant need for remediation by colleges or employers is a clue that the high school diploma no longer represents what it is generally regarded to signify. The level of cognitive skills of typical high school graduates is increasingly uncertain, forcing employers and institutions of higher education to make riskier choices when selecting graduates.

Students are not well served by a pervasive and bipolar policy approach to the high school degree. Does it represent simply the completion of a required number of courses, measured as a collection of Carnegie Units? This approach has led to repeated dilution of the academic requirements attached to the degree. Examples include lowering the standard (as in eliminating former credit requirements in particular subjects or creating different sets of standards for different tracks of study). Or does the diploma reflect an actual level of intellectual and academic achievement and readiness? This view leads to the creation of courses and pathways that develop the necessary knowledge and capacities all students need to succeed after high school. The impacts of high school offerings and experience last far longer than the first step post-graduation.

The causes of this dilemma are complex. Many of the worrisome trends and confusions in graduation have their roots in the complex layering of policy decisions about high school diplomas and pathways of study. As illustrated below, the current landscape for high school graduation is full of uncoordinated and inconsistent policies and practices, created incrementally without awareness of the overall impact on policy coherence and, most important, outcomes for students. The result is that large portions of states' approaches to graduation policy and practice are at cross-purposes, with the graduates themselves bearing the cost of the conflict. If the status quo continues unaddressed, states must prepare to grapple with further deflation of the diploma, increased confusion about what students know and can do at the end of secondary school, and a growing number of young adults who are incapable of building sufficient knowledge capital to lead productive and self-sufficient lives.

The thesis of this paper is that there is a critical need to redesign or, at a minimum, realign states' approaches to high school diplomas. Education leaders have to face the unpalatable reality that lowering high school requirements tacitly condones the lack of performance in elementary and middle schools. Worse, it forces students to bear the cost of system failure by shortchanging their life options. A new graduation

policy is needed that requires coordination from the secondary school system through higher education and occupational training and into the labor force. The new approach needs to more accurately reflect the actual skills and knowledge that students acquire before and in high school, create coherent pathways that ensure both short-term and long-term opportunities for students, measure student outcomes with tools that are correctly matched to their purpose, and offer all stakeholders clear, reliable facts about the results that our K–12 system creates.

Does a high school degree represent simply the completion of a required number of courses, measured as a collection of Carnegie Units? This approach has led to repeated dilution of the academic requirements attached to the degree. Or does the diploma reflect an actual level of intellectual and academic achievement and readiness? This view leads to the creation of courses and pathways that develop the necessary knowledge and capacities all students need to succeed after high school.

The Challenge

The diploma that students receive at graduation serves three distinct functions:

1. It signals **high school completion**—the student has successfully navigated a prescribed course of study and has persisted to reach the goal of high school completion. It serves a checklist purpose that a student has taken a requisite number of courses that log the credit or Carnegie Unit accounting without regard to what has or has not been learned. This function describes the "grit" of getting to graduation but says nothing about the adequacy of the education that students receive. The diploma serves as an incentive to keep students moving forward toward the goal.

2. It provides to outsiders an imprimatur that a student possesses a **defined body of cognitive and noncognitive skills.** *The presumptive difference in knowledge and skills between diploma recipients and non-completers* is what creates the oft-cited wage differential bestowed by high school completion. In most states, policy makers set the parameters of what level of mastery is expected to gain the degree. This function is critically important for institutions of higher education or training organizations, as well as employers and the public at large. This function rests on the specific course and knowledge requirements that a state establishes and how well students have mastered the material. Closely related is the necessity to have valid and reliable methods for measuring what students know and can do.

3. It signals that a student is **adequately prepared to pursue further training or for employment, military service, or other productive occupation.** This function zeroes in on the particular level of mastery required and benchmarks it to the minimum requirements of post-secondary options. There is widespread recognition by media, higher education institutions, and policy makers that a growing gap

exists for students between the level of preparation at the end of high school and the minimum capacities needed to successfully launch and complete post-secondary pursuits. Though this function is related to the nominal level of preparation a student has received, this function involves more than pure academic preparation. It includes social emotional maturity, a focused sense of interests and purpose, and sufficient independence to rise to the demands of the student's chosen post-secondary option. The dwindling number of high school graduates with a clear path forward illustrates the importance of this function.

The crux of the diploma dilemma is that these three functions are in tension, so efforts to improve the results for one may result in declines in another. The country has put a lot of pressure on graduation rates, including much federal pressure, without pausing to consider what would inevitably be sacrificed in order to boost those rates. Relaxing the course or attainment requirements will elevate the graduation rate, but at the cost of the other two functions. Across the country, states have pursued policies and strategies that differ in their pursuit of the three functions. Each state has balanced the three functions in its own way; taken together they create a wide range of what a "high school graduate" represents. The within-state and across-state differences are the focus of this paper. Each function is further examined in the three sections that follow. The insights gained from the evidence frame policy recommendations that conclude the essay.

Diplomas Signal the End of High School

The typical greeting card to mark a graduation offers congratulations along the lines of "Hooray! You made it!" The focus is on celebrating the completion of the high school journey, without regard to what development and achievement may have occurred along the way or what one is prepared for in the years to follow. Sentiments of this kind illustrate the first key function of a high school degree—recognition that a student persisted through four (or more) years of schooling.

All states have multiple diplomas that can be offered to students. Most common is a conventional diploma, granted to students who fulfill a state's set of formal requirements for high school graduation. Greater attention to these specific requirements in the following section will illustrate that the composition of the "standard" degree has become increasingly fuzzy over time.

An "alternate diploma" is permitted under ESSA for students with the most significant cognitive disabilities. The recognition is for effort and persistence and can only be awarded at most to 1 percent of graduates. While the motivation is to support and reward students with disabilities, states have treated this credential with differing degrees of flexibility, resulting in further clarification and guidance from the US

Department of Education. As specified in the ESSA implementation regulations, states include alternate diplomas in their graduation rate calculations, so the incentive exists to seek increases in the cap as a means of increasing the overall graduation rate.

Most states also offer certificates of completion for students who have completed four years (or more) of high school but do not meet the criteria for a high school diploma. Historically, the differences between a standard diploma and a certificate of completion were significant and generally acknowledged, but the distance between them has diminished over time. The one important remaining distinction is regulatory: these students do not count in the calculation of the ACGR.

With a range of end-points available, the way students are guided in their high school experience has important implications for their ultimate success. The default set of requirements is a state policy choice and heavily shapes the courses districts offer and the schedules they create for students over their high school careers. For instance, thirty-eight states have defined a "college and career ready" (CCR) graduation option. In nine of those states all students must complete CCR coursework to graduate. In twelve other states, students are automatically placed in the CCR graduation option and must actively opt out. In the remaining seventeen states, students must proactively opt *in* to the CCR pathway. Research shows that states are not sending the same signals to their students.[5] This notion is explored more fully below in the section examining the adequacy of high school efforts toward college and career readiness. Here, it is important to note that states that require all students to take the most academically rigorous sequence or have it as the default graduation option post higher CCR rates for all student groups—and much higher rates for black and Hispanic students—than states where the default requires students to opt in to a rigorous track. The expectations that state policy makers have for their students clearly matter.

Diplomas Signal Fundamental Knowledge and Abilities

Each state has the duty to set the requirements that students must meet to earn a high school diploma.[6] This happens in a convoluted manner. States typically equate a high school credit to a national standard, known as a Carnegie Unit.[7] Carnegie Units equate hours of classroom time, namely, 120 hours over the course of a school year, to constitute one credit toward graduation. States specify the total number of credits required to graduate and delegate to districts and schools to varying degrees the content of the individual courses. Some variation is controlled through the use of state learning standards and through course content reviews by state education agencies, but districts still have large leeway.

The process is mission-critical for students and their future. In the ideal, the exercise explicates the body of knowledge, skills, and experience that students must

accumulate during their high school years. The requirements should guide the courses and other learning experiences that high schools need to offer their students. Moreover, completion of graduation requirements signals the foundational cognitive capacities and functional knowledge that graduates can be expected to draw upon in their post–high school endeavors. Graduation requirements, then, need to function as both minimums for a successful high school career and baselines for further development. Failing either function leaves the students not only holding empty paper but also holding the bag of broken commitments.

The breadth and depth of the requirements have significant consequences for students and states: if they are too demanding, the graduation rate falls with immediate impacts on employment opportunities and wages. If the bar is set too low, larger numbers of students will receive a credential that lessens the difference between graduates and nongraduates.

Nationally, states offer more than 115 sets of high school graduation requirements for students.[8] States may require students to meet multiple requirements from the following:

- **Course credits.** The number and distribution of course requirements for a diploma vary widely. For example, four years of mathematics is required in sixteen states and the District of Columbia. Twenty-eight states require three credits, three states require two credits, and three states require only one math credit to qualify for graduation. Similar spreads are seen for English language arts (ELA). For science and social studies/civics, fewer than half of the states have any requirement at all.[9]

  Recent years have brought two major trends concerning graduation requirements. They create opposing forces. The first is a decade-long increase in overall graduation requirements for all students. In response to the stronger learning standards of the Common Core, policy makers have increased the number of credits required for English and math. Requirements for science and social studies have seen less stringent treatment; in some states, the requirements have been left entirely to individual districts. Ever since the 1983 release of the report *A Nation at Risk*, the need for stronger requirements has been understood. But even as the formal requirements for courses have been extended, policy makers have approved several concessions to lessen the impact of stricter requirements. For example, the letter grade required to count toward graduation has slipped or been eliminated entirely in many places. Even for the most demanding curricula, the set of course credits needed for the diploma has been lightened in an attempt to have more students meet the new, lower minimums.[10]

Second, states have fudged by offering "eligible" courses that deliver less rigor or less material—or even entirely different content (for example, swapping personal finance accounting for geometry or statistics for algebra II). Some states have as many as ten offerings for tenth-grade English, any of which can be put toward the degree. Once an eligible course is approved by the state, the only way to examine its impact on student learning is through course grades or performance on standardized assessments. The variation of the resulting knowledge base is obvious. (Note: this trend is related to the flourishing of pathways, including career and technical education, discussed in more detail below.)

- **Passing scores on end-of-course exams.** As proof of content mastery, states for many years required students to obtain a minimum score on end-of-course assessments in key grades and subjects. End-of-course exams (EOCs) are aligned with the specific state learning standards that the course purports to cover. Their use grew significantly until 2015, when the trend tapered off and began to decline. States can use scores on EOCs either as explicit graduation requirements (New York) or as a requirement for successful completion of a course (Nevada, North Carolina, Arkansas).[11] Recent analysis showed that EOCs' impact on graduation rates was positive or at worst neutral. Further, the number of EOCs offered by states had no impact on the likelihood of graduation for students of color.

- **Passing scores on high school exit exams.** High school exit exams are summative tests used to measure what students know at a particular point in time. Most high school exit exams have been aligned to state learning standards and are constructed to be reliable and valid indicators of the test taker's knowledge. Their use is on the decline, for several reasons. For the class of 2020, only eleven states will require public school students to pass an assessment as a requirement for graduation, down from the all-time high of twenty-three states.[12] The K–12 enrollment in these eleven states accounts for 35 percent of all public school students.[13] Interestingly, a new civics exam that mirrors the citizenship test has been adopted in eight states, none of which require any other end-of-course exams.

The expansion of eligible courses discussed above creates a challenge: development of a single exam that covers all combinations of authorized courses inevitably leads to less rigorous testing frames, so the instrument loses its value over time. Further, the choice of a passing score to signify a student has demonstrated adequate performance is subject to periodic revision. Not surprisingly, the revisions follow a downward direction. Even so, exit exams remain in place in a handful of states.

Objections to these forms of assessments center on the fact that students don't all have the same starting endowments—whether by personal learning differences,

historical patterns of education deprivation, or lack of educational supports. This creates the need for greater or faster growth of these groups in order to meet the required passing threshold than more privileged students. The consequence is that students of color and low-income students have sharply lower pass rates and therefore lower graduation rates.

- **SAT or ACT assessments.** Twenty-four states and Washington, DC, require students to take the SAT or the ACT.[14] For the class of 2018, 1.9 million (55 percent) of students took the ACT, and 2.1 million (62 percent) of students took the SAT (many took both).[15] As a practical matter, being required to take the exam doesn't signify mastery or readiness, so the incentive exists to use numbers of exams taken rather than results to show off a state's efforts unless a threshold score is set. To date, no states use the results as part of graduation requirements.

  The benefit of using these assessments is both financial and preparatory for students. By relying on a national exam, states are saved from developing their own. The national character of the exams means that states have a ready frame of reference by which to ground their results. The disadvantages of using the SAT or the ACT became apparent as states moved away from strict adherence to the Common Core: the alignment between the national tests and state-built learning standards is weak. Some research indicates that the reliability and validity of the assessments are not the same across all student subgroups, leading to allegations of test bias and racial or economic inequality, and that high school grade point average is more predictive of post-secondary success than the ACT or the SAT and has a less adverse impact on historically underserved students.[16]

Although high school graduation requirements vary from state to state, the requirements share common features. First, they require a clear vision of what we want students to know or be able to do at the end of their high school career. It is understandable that the vision requires updating to maintain currency. The critical issue is whether the updates are downgrades that create a false sense of accomplishment that cannot deliver the options and opportunities that students and families expect to go hand in hand with a diploma.

Second, they require explicit policies and practices to ensure that all districts and schools weigh the rigor of their offerings and award them the same level of reward. Fully crediting diluted courses as equivalent to the most rigorous alternatives is a shell game that leaves students short of the preparation needed to succeed after high school.

Third, if assessments are to faithfully reveal how much students have learned, they should also bear the responsibility to proactively demonstrate their alignment to learning standards and their freedom from systematic bias across all student groups. Of

the components discussed above, only EOCs and high school exit exams, now on the decline, have the necessary alignment to state learning standards and measurement rigor to assess all students. Claims of "close enough" aren't if they create unequal challenges to select groups of students. Finally, efforts to lessen the requirements in order to raise the graduation rate are the antithesis of accountability: they sanction all the shortchanging that occurs throughout the primary and secondary years.

Diplomas Signal Students Are Ready to Roll

Graduates and their families expect that high school will adequately prepare them with knowledge and skills to successfully launch their next phase of endeavors. Whether students aim to pursue additional education, undertake professional training, or move directly into employment, they believe in an implicit contract between schools and students: that earning a diploma equates to adequate development of cognitive and noncognitive skills. This is what "college and career ready" signifies. It is an emerging term of art generally thought of as the level of preparation that gives graduates a solid chance to get to and through occupational training, college, or whatever option a student chooses.

ESSA encourages states to define and measure the college and career readiness of their graduates. Unsurprisingly, the term is defined in diverse ways across the forty-six states that have created such measures. Only thirty-seven of them have definitions that are grounded in clear and objective measurements. Despite being early days, the available research yields important findings that highlight where additional policy attention is needed.

The research is clear that the dilution of graduation requirements and a lack of transparency have resulted in a shortfall of preparation that is harming students' readiness for post-secondary engagement:

- **In more than half the states, students who complete the "default" high school course requirements in mathematics will fall short of completing the coursework required for entry into their state university.**[17] In science, students in twenty-four states who complete the default set of requirements will fail to meet the state university entry requirements. For both subjects, the failure could be in number of credits or in the rigor of the sequence taken. These gaps are even more pronounced for disadvantaged students, who are most likely to find themselves in lower-aiming high school pathways.

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- **The readiness picture is no rosier for students who gain admission to higher education.** Among first-year college students, 24 percent are placed into remedial mathematics courses and 12 percent require remedial reading courses. In two-year colleges, 61 percent of black students and 50 percent of Hispanic students take remedial mathematics. Remedial English courses are needed by 49 percent of black students and 41 percent of Hispanic students.[18]

Perhaps the most important point from the research is that the dichotomy between college and career training preparation is a false one. The widespread policy view is that, for students not immediately poised to go to higher education, their short-term vocational aspirations do not need the same level of preparation as their college-bound peers. Yet in a 2017 survey, 84 percent of high school students reported that they expected to pursue two-year or four-year higher education at some point.[19] Thus, when state education leaders create career and technical education (CTE) options so students can be poised to pursue further training or skill-building after high school, the CTE options should also contain sufficient academic development to keep future college options open.

The central tenet of the 2018 Strengthening Career and Technical Education for the 21st Century Act (Perkins V) is to preserve future higher education options while providing near-term career education. The mixed approach can deliver benefits in secondary, post-secondary, and lifelong education. This is especially valuable to students who currently lack resources to enroll in further programs.

The benefits, however, are not available in many states, due to their current organization and delivery of CTE. The following challenges and issues illuminate the state of CTE education today:

- **States lack clear terms, goals, and standards.** Today, states establish broad parameters for CTE but leave to school districts the focus and design of offerings. Local sophistication in labor projections, curriculum development, and skill assessment varies dramatically. Often, school districts rely for guidance and partnership on local firms whose incentives may not align with the long-run interests of the students. In a recent Fordham Institute study of ten cities, CTE programs were not aligned with national demand or local high-paying jobs.[20] In addition, CTE offerings can range in intensity from a soft-touch career exposure to opportunities for non-course-based work experience to integrated work and courses to coherent collections of courses that build deep understanding and skills.[21]

  Highly motivated districts and schools can develop innovative and engaging CTE learning opportunities that result in bankable skills. New programs in

entrepreneurship and robotic manufacturing are two such examples. Only a third of districts reported that their CTE programs were full-fledged pathways of coordinated academics and work experience. More typical CTE offerings are scattershot: students take one or more courses, but they do not lead to a solid base of learning, much less advance a student toward a credential. The downside is also seen in CTE options that produce underprepared students or skills that cannot support a living wage after high school. Cosmetology and child care are relevant examples of the risks.

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- **States hinder CTE success with their credit award and funding policies.** Districts report that finding time in students' schedules is the largest barrier to student participation in career education, especially if the courses are offered off campus. The problem arises because state funding is tied to enrollment and attendance, so out-of-school time or uncredited work experience is not counted. Further hindrance comes from class schedules that create untenable or fractured time for career experience.

  These trends may be changing. In twenty-one states, graduation requirements encourage or require students to participate in career-related coursework, either through their elective credits or by providing a multiple-credit career pathway required of all students.

- **States are not assuring that CTE offerings lead to careers with a living wage.** Perkins V requires that schools offer pathways in high-demand, high-wage careers, but most career pathways do not align with long-term career prospects. Student enrollment is higher in programs aligned with local demand, but only for careers that pay low wages. Districts often do not communicate with local or regional industries, which could facilitate connections to higher-paying opportunities. Only about one-third of districts surveyed nationally coordinated with industries about which occupations are in demand. Only in Texas and California do state policy makers support local districts to engage with industries or provide labor forecasts.

  Of particular concern is the lack of access to high-quality career education for low-income students and students of color. In one study, only half of CTE graduates were college and career ready. The figures for black and Hispanic students and for students in poverty were much lower.[22] According to the National Center for Education Statistics, white and Asian students are more likely to concentrate their CTE coursework in a single focus, whereas black and Hispanic students

are more likely to take a mix of different CTE courses and end up lacking concentrated depth and experience by the end of high school.[23]

Schools and districts continue to treat CTE as the consolation option for students who do not shine academically. One of the associated challenges is that CTE students are also more likely to enroll in the less rigorous tracks of high school offerings. Since these courses create an even wider gap in qualifications for higher education, CTE students face significant barriers to furthering their education after high school.

- **Most states have not considered how to credential CTE, but students and employers both see a need for clarity and transparency.** Ten states have career endorsements that students can add to an existing diploma. Through an endorsement, students demonstrate competence in a specialized area of study and, depending on the field, can show progress on an industry-based certification. Students can add endorsements to standard or college-preparatory diplomas. Five states offer a CTE diploma.[24]

Because the focus on college and career readiness is still fairly new, there are large gaps in our understanding of what factors are pertinent. States are just beginning to select the measures they will use to measure the preparation of their students. The specific metrics used range from advanced course–taking, advanced placement matriculation, or advanced placement passing scores to meeting benchmarks on the SAT or ACT.

Reporting the CCR performance is also in a novice state. Across the country, forty-six states have a defined CCR measure that differs from their graduation rate. In twenty-seven states, that metric is only reported on a statewide basis. In twenty-one states, state-level aggregate results are augmented with breakouts by subgroups. In only twelve states is a more nuanced report available that disaggregates the state measures into submeasures. Clearly, there is a need for more refined measurement and reporting.[25]

It is too soon to know how trustworthy these CCR measures will be. Their predictive validity is still unproven. In acknowledging what we do not yet know, it is also important to be clear about what we know is ineffective. States are increasingly aware that tests that have reliability when used for assessing content mastery such as exit exams or EOCs are not strongly reliable as predictors of future enrollment or completion of post-secondary options. There is also growing evidence that four-year grade point averages may hold greater predictive power, despite widespread fear that grades can be manipulated. And even the stalwart SAT and ACT assessments, once considered the arbiters of college readiness, are finding their power under scrutiny. The field is ripe for new ideas and approaches.

Policy Recommendations

The foregoing evidence and discussion point to a pervasive need for a refined approach to high school diplomas, one that places the preparation of students and the protection of their post-secondary options at the center of a new policy. For any policy recommendations to succeed, two pervasive practices must be addressed. The first is the persistent low performance of many elementary and middle schools that results in students arriving at the high school door unprepared for the required work. Second, as long as education systems rely on measures of seat time as the accounting unit, an unresolvable tension between "showing up" and "measuring up" will persist. We need to address education shortfalls before students get to high school so they can be ready to engage with demanding material and fully engage in developmental experiences. We need significant realignment of courses and pathways to build a coherent and substantive base of knowledge and skills. Opportunities for CTE should focus on stackable courses that build meaningful progress toward in-demand sustainable jobs and occupations.

For any policy recommendations to succeed, two pervasive practices must be addressed. The first is the persistent low performance of many elementary and middle schools that results in students arriving at the high school door unprepared for the required work. Second, as long as education systems rely on measures of seat time as the accounting unit, an unresolvable tension between "showing up" and "measuring up" will persist.

We cannot make the necessary adjustments to graduation requirements and pathways without better data and reporting. We must create a common vision of what a graduate looks like. Only then can we build uniform and universal measures and metrics of student activity and outcomes to fairly reward students for their growth and achievement and to deliver unambiguous information about students' capability to undertake employment or further development. Greater coordination and integration of policy and practice from middle school through high school to post-secondary institutions to the labor force are necessary to ensure that high schools provide a rich array of rigorous course content that is relevant to post-secondary pursuits and that preserves future options to switch employment or career directions.

Such an ambitious effort will require many facets of the current set of policies and practices to be changed. Each of the following policy recommendations addresses the areas that have the greatest potential impact on improved outcomes for students.

Improvements to Current Graduation Frameworks

- Reduce the gap between high school graduation requirements and the minimum entry requirements for the state university system(s). Considering that the majority of future jobs will require post-secondary training or experience, states' education leaders are increasingly expected to ensure that all students have

access to the most rigorous courses, whether by direct delivery or through online education options.

- Consider the signal-to-noise ratio of current diplomas. The post-secondary communities find it increasingly difficult to gauge the value of a diploma since it can represent a widening span of skills and knowledge. Establish a set of mastery-based certifications that clearly lay out how well students have learned the materials required to be college and career ready.

- Ensure that graduation requirements and curricular frameworks have the most rigorous college-ready courses as the default pathway for all students. Research shows that most students follow the default option, whatever it may be, and then work to meet whatever requirements are involved. Setting high expectations for all students is a no-cost way to improve graduation results, especially for students in underserved communities.

- Reevaluate the rigor of classes that are approved for credit but cover substantially less material than the most rigorous courses. Consider giving the "lite" courses a lower weight toward graduation or mastery credentials. Encourage students to continue their high school education until they can meet fully the requirements for their preferred post-secondary option.

- Critically review the accuracy and cultural sensitivity of assessments used to judge student performance. Regular analysis of the alignment of various instruments to state learning standards and college and career readiness is needed to identify ways to enhance education success for all students.

Improvements to Career and Technical Education

- Broaden decision making about CTE offerings to consider short-term demand and wages for the training offered, drawing on available labor intelligence and insights from regional firms. Leverage research expertise from in-state institutions of higher education to produce triennial forecasts of demand in occupations that have strong representation in the state. Support multiyear regional planning efforts to create coherent CTE programs that align with the results.

- Support CTE pathways that have sufficient depth and breadth to deliver substantive knowledge and skills by the end of high school. Ensure that there is sufficient sequence to help students pursue an industry credential, even if additional years of post-secondary training are needed to earn it. Develop quality standards to guide districts and schools to provide meaningful CTE offerings. Collaborate with industry and trades to build or align with meaningful credentials.

- Prioritize equal access to high-quality CTE offerings, with particular emphasis on ensuring that low-income students and students of color have equivalent opportunities for CTE.

- Ensure that CTE pathways provide equivalent rigor and preparation as traditional curricula so that participating students maintain their options for further study or training. Many CTE options require additional training after graduation to reach the levels needed for gainful employment; students should leave high school ready to move on in their training. Since the majority of high school students aim for higher education at some point, leaving graduates unprepared for anything other than a first job shortchanges students in the long term.

Improvements to College and Career Readiness

- Define clear and common standards for college and career readiness with associated program parameters and defined student progress and outcome measures.

- Improve communication about graduation requirements, including course-related specifics, yearly pacing, and credit accumulation so parents and students see and understand the importance of careful course selection in high school.

- Create and gather detailed student-level data on student pathways, performance, and demographics to report on outcomes for all students and for groups of students to show how opportunities and outcomes equate for different groups of students. Build a research cohort of current high school students to support decades-long longitudinal tracking and impact research to better inform CCR practices and evaluate the utility of high school-based measures of future success.

The steps described here demand candor, courage, and long-term commitment. Success will require detailed design and implementation efforts.[26] Both are essential if we are to realize the human capital potential of today's students and strengthen the economic and social vitality our country needs in the decades to come.

NOTES

1 US Department of Education, Office of Elementary and Secondary Education, "Consolidated State Performance Report, 2010–11 through 2016–17," *Digest of Education Statistics*, table 219.46, National Center for Education Statistics. (This table was prepared in December 2018.)

2 National Bureau of Labor Statistics, 2015, https://www.bls.gov/opub/ted/2015/median-weekly-earnings-by-education-gender-race-and-ethnicity-in-2014.htm.

3 Eric A. Hanushek, Ludger Wößmann, and Paul E. Peterson, *Endangering Prosperity* (Washington, DC: Brookings Institution, 2013).

4 Monica Almond, "Paper Thin? Why All High School Diplomas Are Not Created Equal," Alliance for Excellent Education, July 2017.

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About the Author

MARGARET E. RAYMOND

Margaret "Macke" Raymond is founder and director of the Center for Research on Education Outcomes (CREDO) at Stanford University. The CREDO team conducts rigorous and independent analysis and evaluation of programs that aim to improve public school outcomes for K–12 students. She serves as a regular source for local and national media and on multiple advisory boards, technical resource groups, and peer review panels.

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Hoover Institution, Stanford University
434 Galvez Mall
Stanford, CA 94305-6003
650-723-1754

Hoover Institution in Washington
The Johnson Center
1399 New York Avenue NW, Suite 500
Washington, DC 20005
202-760-3200

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