PPIC PUBLIC POLICY INSTITUTE OF CALIFORNIA

College Readiness as a Graduation Requirement

An Assessment of San Diego's Challenges

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DIGITAL VISION

SUMMARY

To be considered for admission to the University of California (UC) or the California State University (CSU) system, high school students must complete all a–g courses with grades of C or higher. The a–g course sequence includes 30 semesters of UC-approved college preparatory coursework in seven subject areas, and completion indicates a high level of academic preparation. Recently, four large school districts (San Diego, Los Angeles, San Francisco, and Oakland) adopted new graduation policies requiring that students complete these courses to obtain a high school diploma. These policy changes are in part a response to concern expressed by the American Civil Liberties Union and other groups about wide variations in a–g completion rates across high schools in major urban districts.

This study examines the potential effect of this bold change by analyzing the transcripts of students in the San Diego Unified School District. Focusing on the class of 2011, we assess how course-taking patterns will need to change for the class of 2016. Findings from San Diego should inform implementation of new graduation policies in the other districts, in which a similar percentage of graduates meet UC/CSU admission eligibility requirements.

Although the UC/CSU systems require that students pass all a–g courses with a grade of C or higher, San Diego and other districts that have instituted new a–g graduation policies allow grades of D or higher to count toward meeting the requirements for graduation, perhaps in recognition of the difficulty of college preparatory coursework. In San Diego's class of 2011, 61.1 percent of graduates would have met the lower D or higher standard, whereas

only 41.8 percent would have met the C or higher standard. The share declines if we include students who dropped out or were still in school but did not graduate in 2011.

English Learners, Hispanic and African American students, males, students whose parents had a high school education or less, and students enrolled in special education had lower than average a–g completion rates. In the most dramatic gap, 67.2 percent of graduates who had never been English Learners completed the a–g course sequence with grades of D or higher, compared to only 35.2 percent of graduates who were still English Learners in grade 12.

San Diego Unified, and most likely its counterparts, will need to undertake major interventions to make sure that all students accelerate their learning to meet the new standards and graduate from high school. Otherwise, the very students whom the reforms aim to help could be denied high school diplomas.

Our findings raise a number of policy issues, apart from the obvious need for interventions to retain and assist at-risk students. We found that in San Diego, 12 percent of graduates who did not meet the a–g requirements with grades of C or higher nonetheless enrolled in four-year colleges or universities. This raises an important concern: a–g courses are required only by the UC and CSU systems, and it would be unfortunate if students who might go to other colleges or universities are unable to do so because they fail to graduate from high school.

Another policy concern is that the new requirements may discourage students from taking the Career and Technical Education courses that prepare them for careers either immediately after high school or after completing postsecondary programs.

Perhaps the most important policy implication is that clear communication with students, parents, and teachers about the new requirements is critical. This communication needs to begin in middle school, if not earlier, because middle school students take many courses that either meet a–g requirements or prepare them to complete subsequent a–g coursework in high school.

Districts implementing these new graduation requirements will need to guard against two unwanted side effects: the watering down of a–g course content and possible grade inflation that allows students to graduate even though they are not mastering the content of a–g courses.

As an aid to administrators in districts that have adopted the a–g course sequence as a graduation requirement, we are releasing the "a–g On Track Model"—a set of spreadsheets that can forecast which grade 6 or grade 7 students will have the most difficulty fulfilling a–g requirements. Districts that have not adopted a–g graduation requirements may want to use the On Track Model to forecast the college readiness of middle school students.

The a–g On Track Model is available at
www.ppic.org/main/dataSet.asp?i=1336
and http://sandera.ucsd.edu/resources/index.html

For the full report and related resources, please visit our publication page:
www.ppic.org/main/publication.asp?i=1049

Introduction

President Barack Obama's repeated calls for American high schools to increase the college readiness of graduates have prompted schools nationwide to examine both the level of college preparation among their high school students and variation across student subgroups. In California, eligibility to attend either the University of California (UC) or the California State University (CSU) hinges on whether students complete the so-called a–g course requirements while in high school. The fact that minority and socioeconomically disadvantaged students are underrepresented in both of the state's public university systems has prompted many to consider whether all students have access to the courses they need to prepare them for UC or CSU.

In California, the American Civil Liberties Union (ACLU) has made the a–g requirements a civil rights issue, arguing that many students lack access to a–g courses and the classes leading up to these college preparatory courses.[1] Similarly, Education Trust–West has called for tougher graduation standards that will prepare all high school graduates for postsecondary education, stating that "all students ought to graduate with the courses needed to enter California's public universities" (Education Trust–West 2010, 2012). These organizations have played a major role in encouraging a number of large districts in the state to make passing the a–g courses a requirement for a high school diploma.

Several districts, including San Diego Unified School District (SDUSD), Los Angeles Unified School District (LAUSD), and the unified school districts of Oakland, San Francisco, and San Jose, have adopted policies requiring that students complete the a–g course sequence to earn a high school diploma. San Jose Unified School District (SJUSD) was the first to implement the new standard, starting with the graduating class of 2002. The other districts have put policies in place that will go into effect for students graduating in the near future.

The call to level the playing field by requiring that all high school graduates complete the courses that make them eligible to attend one of California's two public university systems provides a bold and egalitarian vision of the future of California education. But such a major shift in the graduation hurdle creates the risk of a sizable drop in the graduation rate.

WHITE PACKERT

California high school students must complete the a–g requirement to be eligible for admission to the UC and CSU systems.

This report examines data from one of the districts that has adopted the new graduation standard, San Diego Unified School District. In San Diego, students in the class of 2016 will be the first to face the new requirement for earning a high school diploma. Although San Diego Unified's graduation requirements for students graduating before 2016 are close to the UC/CSU requirements, there are important differences in the new graduation policy.

Several districts have adopted policies requiring that students complete the a–g course sequence to earn a high school diploma.

The first part of this report examines a–g completion rates for students in the class of 2011. We do this to explore the challenges that SDUSD is likely to encounter as it transitions to a higher graduation standard for the class of 2016. These completion rates represent a lower bound

on a–g completion rates for the class of 2016, of course, because those students, as well as their schools and parents, know about the new policy and will have time to react to it.

Specifically, we explore the following questions: What percentage of students would not have completed the requirement? Which subject areas posed the biggest challenges? How did completion rates, both overall and by subject, differ by race/ethnicity, parental education, language status, and special education program participation? The report calculates a–g completion rates as well as high school graduation rates and the percentage of graduates who enter two- and four-year colleges and universities in the year after graduation.

The second part of the report outlines two complementary goals: to provide a statistically derived model that will identify students at the end of grades 6 and 7 who are likely to need considerable assistance to fulfill the a–g requirement and more generally to provide middle school signposts of students who are on track to complete a–g.

Our analysis of recent students' completion of the various elements of the a–g requirements provides specific advice about where students and schools should focus their efforts to bridge the very large gap between current levels of achievement and the new standard.

This report focuses on the San Diego Unified School District, but the findings should be useful to the other districts that have adopted the new requirements, since recent snapshots of their a–g completion rates are fairly similar to SDUSD's.[2]

Background on the a–g Requirements

To be eligible to apply for admission to the UC and CSU systems, California high school students must complete 30 semesters of UC-approved coursework in seven subject areas (the a–g course sequence) with grades of C or higher (see the text box). School districts must submit local coursework to the UC to obtain a–g designation, and in some subject areas (history/social studies, mathematics, and world languages), the course requirements are quite specific.

a–g subject-area requirements

Subject	Course requirement
a: History/social studies	4 semesters
b: English language arts	8 semesters
c: Mathematics	6 semesters
d: Laboratory sciences	4 semesters
e: World languages	4 semesters
f: Visual and performing arts	2 semesters
g: College-preparatory elective	2 semesters

Students can meet some of these requirements by taking certain college courses or scoring at certain levels on Advanced Placement, International Baccalaureate (IB), or Scholastic Assessment Test subject-area examinations. More information is available from the University of California Office of the President.

The a–g course requirements are considerably more rigorous than the minimum requirements set by the state of California for a high school diploma (Table 1 on the next page). And although current SDUSD graduation requirements are fairly closely aligned with the a–g course sequence, there are several important differences. For example, SDUSD does not currently require any foreign language coursework, and although students must complete three years of mathematics, they are not required to complete intermediate algebra. Also, although students earn credit for courses completed with D grades, SDUSD requires an overall grade point average (GPA) of 2.0 for graduation.

Historically, only a minority of high school graduates in California has completed the a–g requirements. As Table 2 shows, there has been some improvement over time. However, the fact that nearly 60 percent of the state's high school graduates do not complete the a–g course sequence with a C or higher underlines the challenges facing districts that mandate a–g for all. Of course, because not all high school students graduate, the percentage of all entering grade 9 students who complete a–g requirements within four years is probably considerably lower.

Table 1. SDUSD and UC/CSU a–g standards are much more rigorous than California's minimum graduation requirement

Subject	State-mandated minimum requirements for high school graduation	Current SDUSD graduation requirements[a]	UC requirements for freshman admission[b]
English	3 years (6 semesters)	4 years (8 semesters)	4 years (8 semesters)
Mathematics	2 years (4 semesters), including algebra I	3 years (6 semesters), including algebra, geometry, and intermediate algebra *or* unifying algebra and geometry	3 years (6 semesters), including algebra, geometry, and intermediate algebra
Social sciences	3 years (6 semesters), including U.S. history and geography; world history, culture, and geography; 1 semester of American government and civics; and 1 semester of economics	3 years (6 semesters), including world history, U.S. history, 1 semester of government, and 1 semester of economics	2 years (4 semesters), including U.S. history or 1 semester of U.S. history and 1 semester of civics or American government; and world history, cultures, and geography
Science	2 years (4 semesters), including biological and physical science	3 years (6 semesters), including UC-approved life science (d), UC-approved physical science (d), and 1 additional UC-approved science (d or g)	2 years (4 semesters) with lab required, chosen from biology, chemistry, and physics
Foreign language	1 year (2 semesters) foreign language/ visual and performing arts (VAPA) combined: VAPA, foreign language, *or* career technical education (CTE)	World languages and VAPA combined: 1½ years (3 semesters): Option A: 1 year of world languages and 1 semester of visual, performing, or practical arts or Option B: 1 year of visual and/or performing arts and 1 semester of practical arts	2 years (4 semesters) in the same language
Visual and performing arts			1 year (2 semesters) of VAPA chosen from dance, drama/theater, music, or visual art
Physical education	2 years (4 semesters)	2 years (4 semesters)	Not applicable
Electives	Not applicable	Additional credits needed to complete required 44 semester credits	1 year
Total	26 semester credits	44 semester credits	30 semester credits (14 in the last 2 years of high school)

SOURCES: California Department of Education (CDE) (2012) and San Diego Unified School District (2012).

[a] SDUSD students must also maintain an overall GPA of 2.0 to graduate.

[b] Admission eligibility requirements are nearly identical for the UC and CSU systems, but there are some slight differences. For example, both require two years of science. However, although the UC allows the two years to be selected from the subjects of biology, chemistry, or physics (from the "d" subject area), the CSU requires that the two years include at least one year of physical science and one year of biological science (one from the "d" subject area and the other from the "d" or "g" area. For this study, we use the UC definition. See California State University (2013) for information about CSU requirements.

Table 2. The majority of California high school graduates do not complete the a–g course sequence

	Overall	Male	Female
1999–2000	34.8	31.5	37.9
2004–2005	35.2	30.9	39.3
2010–2011	40.3	36.0	44.4

SOURCE: California Department of Education (2010).

NOTE: Cell entries show the statewide percentage of graduates completing the UC and CSU a–g requirements, for selected years.

How Some Districts Have Implemented the a–g Requirements

San Jose Unified School District was the first school district in California to make a–g coursework the norm for high school graduation, effective with the class of 2002. Since then, some of the largest urban districts statewide have implemented similar graduation policies. The text box on the next page summarizes several large districts' policies; for more detail, see Technical Appendix A to this report.

A comparison of new a–g graduation policies in select California school districts

District	Policy	Effective Date
San Diego Unified	Students must meet UC a–g requirements but may do so by earning a D or higher in each course, rather than the C required by UC. Overall GPA of 2.0 required for graduation.	Class of 2016
Los Angeles Unified	Students in classes of 2012–2015 are required to enroll in a–g sequence of coursework. Beginning with the class of 2016, all students must complete UC a–g with a D or higher. Beginning with the class of 2017, students must earn a C. There is no overall GPA required for graduation.	Class of 2012
San Jose Unified	Students must meet a–g requirements but may do so by earning a D or higher in each course. There is a waiver or opt-out process. Overall GPA of 1.0 is required for graduation.	Class of 2002
San Francisco Unified	Students must meet a–g requirements but may do so by earning a D or higher in each course. Minimum overall GPA for graduation is not specified.	Class of 2014
Oakland Unified	Students must meet a–g requirements but may do so by earning a D or higher in each course. Special education students may be exempt from the requirement. Students in continuation schools are exempt. Overall GPA of 2.0 is required for graduation.	Class of 2015

See Technical Appendix A for a list of specific sources.

The most notable common element across most districts' policies is that they allow a–g course credit earned with a D or higher to count toward meeting graduation requirements. This lower standard seems to reflect the belief that it would be wrong to deny high school diplomas to students whose course grades fell slightly short of the C or higher required by California's public universities.

One notable difference across districts is that San Jose and Oakland have included an explicit opt-out process in their published a–g graduation policies, perhaps to comply with two provisions in the California Education Code: one that requires that districts adopt alternative means for students to meet graduation requirements (Education Code 51225.3) and one that requires that districts allow students who have successfully completed grade 10 to choose either a traditional college preparatory or a career preparatory program (Education Code 52336.1). Other districts seem to be complying with these provisions by referring to "course substitutions," "opt-out" provisions, and "alternative coursework" in their new graduation policies. It will be important to extend this study to examine the extent to which students in the class of 2016 and their parents seek alternative pathways to graduation, particularly as they complete grade 10 in spring 2014.

A second difference is that Los Angeles Unified School District will use the D or higher requirement only for the class of 2016; after that, it plans to give high school diplomas only to students who complete a–g coursework with grades of C or higher.

The most notable common element across most districts' policies is that they allow a–g course credit earned with a D or higher to count toward meeting graduation requirements.

How Many Students in San Diego's Class of 2011 Would Have Met the New a–g Requirement?

To explore the challenges that SDUSD is likely to encounter as it transitions to higher graduation standards for the class of 2016, we calculated a–g completion rates for the class of 2011 using grades of either D or higher (the SDUSD policy) or C or higher (the UC/CSU requirement). The completion rates we generate are likely to be a lower bound for the class of 2016 and subsequent classes, as these later cohorts (and their teachers) know about the new policy and can prepare to meet the higher standards. The point of this exercise is to provide a candid assessment of how much improvement will be needed.

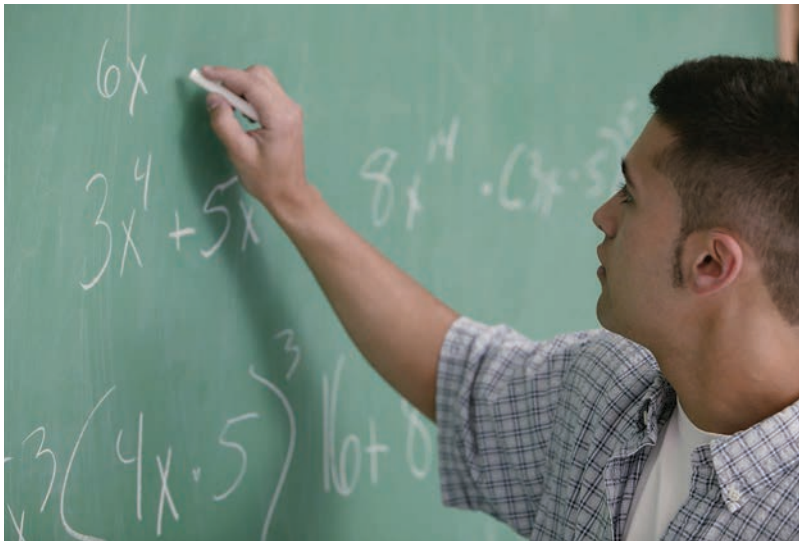
The subject areas that present the biggest barriers are mathematics, English, and foreign language.

We include in the class of 2011 all students who entered grade 9 for the first time in 2007–2008, as well as students who entered the district in grade 10 or higher in a later school year and who, at time of entry, would have been expected to graduate in 2011.[3] Most of the data we present below focus on students who *graduated* on time in 2011, because we want to estimate how many graduates would have had their diplomas withheld under the new policy. But we also present selected data for the broader set of students in the class of 2011 who did not transfer out of the district before spring 2011, to include dropouts and students who remained in school but failed to graduate by spring 2011.

Naturally, completion rates are lower for the larger group that includes nongraduates, because nongraduates will not typically have taken the a–g courses. Data for all students in the class of 2011—graduates and nongraduates—provide a more accurate picture of the percentage of students entering high school who are likely to have trouble meeting the new graduation standard. The data for this larger sample provide important information about the levels and types of support that will be needed to improve graduation rates under the new policy.

Table 3 shows the percentage of students in the class of 2011 who completed the a–g requirements using both the C or higher and D or higher grade requirements. We also calculated the percentage of students who took all of the required a–g coursework, including those who failed one or more courses (as shown in the "Attempted" column). This calculation allows us to distinguish between students who took all required courses but failed some of them and those who did not attempt all of the required courses.

Completion rates for 2011 graduates were 41.8 percent and 61.1 percent, respectively, when we use the C or higher or D or higher standards. The more generous D or higher standard makes a big difference: an additional 19.3 percent of graduates would have met the more lenient standard. But even with the less strict a–g standard of D or higher, 39 percent of the students who received diplomas would *not* have graduated. The subject areas that present



COMSTOCK IMAGES

Many students fail to complete the a–g requirement because they do not enroll in all required courses.

Table 3. Low completion rates on a–g courses for the class of 2011 are a cause for concern

Subject	Graduates			Graduates, dropouts, and still enrolled		
	C or higher	D or higher	Attempted	C or higher	D or higher	Attempted
Social studies (a)	79.1	92.1	97.5	55.8	66.9	75.2
English (b)	62.3	84.0	92.6	41.7	56.8	64.6
Math (c)	61.5	79.5	84.6	42.4	55.6	60.9
Science (d)	81.5	96.2	97.7	57.6	69.9	75.5
Foreign language (e)	68.6	76.1	77.0	48.6	54.8	56.1
VAPA (f)	90.3	92.0	92.7	71.0	73.9	76.9
Elective (g)	96.2	98.8	99.0	76.6	81.9	86.5
Overall UC a–g	41.8	61.1	68.2	27.6	40.4	45.5

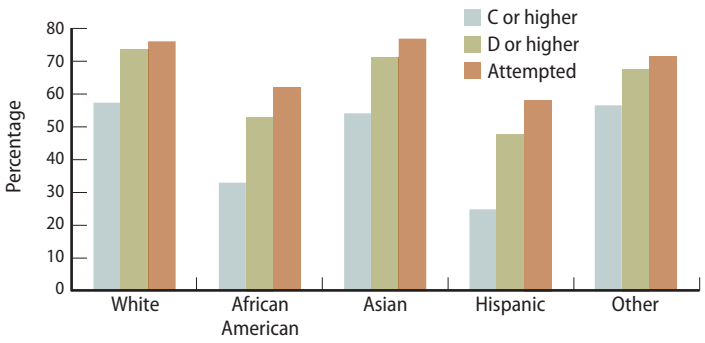
SOURCE: Authors' calculations.

NOTES: The columns show the percentage completing a–g requirements with all course grades of C or higher and with all grades of D or higher. The columns titled "Attempted" include a–g courses for which a failing grade was recorded. This column helps to distinguish between students who never attempt the complete set of courses and those who attempt the courses but fail one or more. The columns on the left titled "C or higher" and "D or higher" include graduates from the class of 2011; those on the right add graduates, dropouts, and those still enrolled in 2011 who did not graduate.

the biggest barriers are mathematics, English, and foreign language. As shown in the third column, 68 percent of students attempted and/or passed the full complement of courses included in the a–g requirements. Thus, 32 percent of students, or about one-third, did not attempt all of the courses in the a–g sequence. The subject area attempted by the fewest students was foreign language.

The rightmost trio of columns repeat these calculations, this time for all students in the class of 2011—including those who dropped out and those who had not yet graduated by 2011 but excluding those who transferred out of the district before grade 12. Completion rates are markedly lower in this sample, suggesting that large numbers of students will have trouble completing the new a–g requirement.[4] Using the district's D or higher requirement, only 40.4 percent would be eligible for graduation. Clearly, these numbers are a cause for concern.

Figure 1. Some groups of students have especially low a–g completion rates



SOURCE: Authors' calculations.

NOTES: The bars show the percentage completing a–g requirements with all course grades of C or higher and with all grades of D or higher. The bars titled "Attempted" include a–g courses for which a failing grade was recorded.

Variations across Student Subgroups

Students from all ethnic groups are at risk under the new graduation policy, but some groups are especially vulnerable. Figure 1 shows completion rates by racial/ethnic group for the class of 2011, using both the SDUSD D or higher and UC/CSU C or higher grade requirements. More than one-quarter of white and Asian students failed to complete the a–g sequence of courses, using the D or higher standard; completion rates for African American and Hispanic students were lowest, at 53.5 and 47.5 percent, respectively.

The difference in the passage rates using the two letter grade requirements shows, for the subsample of students who completed all a–g coursework, those who met the D or higher requirement but not the C or higher requirement obtained at least one grade below a C in the a–g course sequence. The gap between the two passage rate definitions is particularly large for Hispanic students: Nearly twice as many Hispanic students completed the required a–g courses with a D or higher than with a C or higher.

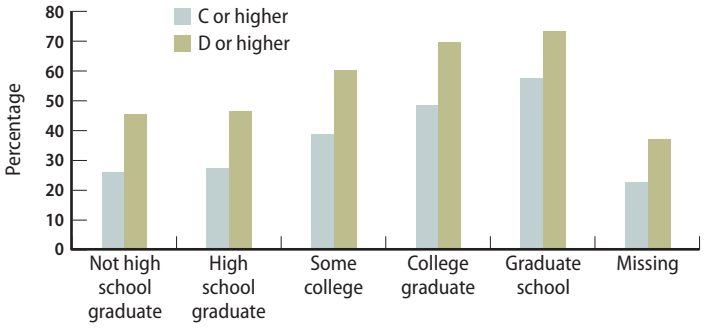
Completion rates rise only slightly when we include failed a–g classes. Thus, most of the students in each group who fail to complete the a–g requirement are not attempting all of the required courses. For the most part, students are not failing courses; rather, they are not enrolling in them in the first place. However, about one in ten students in the Hispanic and African American groups are taking all of the a–g courses but failing one or more.

English Learners (ELs) are likely to find the new graduation requirements especially challenging. As shown in Table 4, "Never EL" students were almost 20 percentage points more likely to complete the a–g courses with C or higher or D or higher than were students in the "Ever EL" group. We also examined whether passage rates for former ELs, known as Redesignated Fluent English Proficient (RFEP) students, are closer to those of students who were never ELs or to students who were still ELs in grade 12. As expected, RFEP students perform better than students who are still ELs in grade 12, and their overall completion rate is closer to that of students who were never ELs, especially when we use the SDUSD requirement of D or higher grades. Graduates who were still ELs in grade 12 had an exceptionally low a–g completion rate—20.3 percent under UC/CSU grade requirements and 35.2 percent under SDUSD grade requirements. To some extent, late arrivals to the district contribute to the EL a–g disadvantage. However, even in grade 6, students who are designated as ELs are at a disadvantage with respect to a–g completion.

We examined three other ways to group students: by parental education, by gender, and by special education program participation. There is a very strong positive relation between parental education and a–g completion, using either letter-grade definition. But the relation is strong only among students whose parents went to college: we found little distinction in a–g completion rates between students whose more highly educated parent had a high school diploma and those whose parent(s) had not graduated from high school (see Figure 2).

As the top panel of Table 5 shows, students in special education are considerably less likely to complete a–g requirements than those who were not in special education. In terms of overall completion rates, students in special education fared more poorly than students who were ever English Learners, with completion rates of 44.6 and 49.2 percent, respectively, when applying the D or higher requirement.

Figure 2. For the class of 2011, completion rates are correlated with parental education



SOURCE: Authors' calculations based on SDUSD data.

NOTES: The bars show the percentage completing a–g requirements with all course grades of C or higher and with all grades of D or higher. Students are categorized by the level of education of their more highly educated parent.

Table 4. English Learners struggle to complete a–g coursework even after being reclassified as fluent

	C or higher	D or higher
Ever English Learner	28.9	49.2
Currently EL	20.3	35.2
RFEP	34.0	57.6
Never English Learner	48.5	67.2

SOURCE: Authors' calculations.

NOTE: The columns show the percentage of students in SDUSD's class of 2011 completing a–g requirements with all course grades of C or higher and with all grades of D or higher.

Table 5. Students in special education complete a–g courses at a low rate, and males lag behind females

	C or higher	D or higher
Students in special education	27.8	44.6
Students not in special education	43.7	63.3
Female	46.0	64.5
Male	37.5	57.6

SOURCE: Authors' calculations.

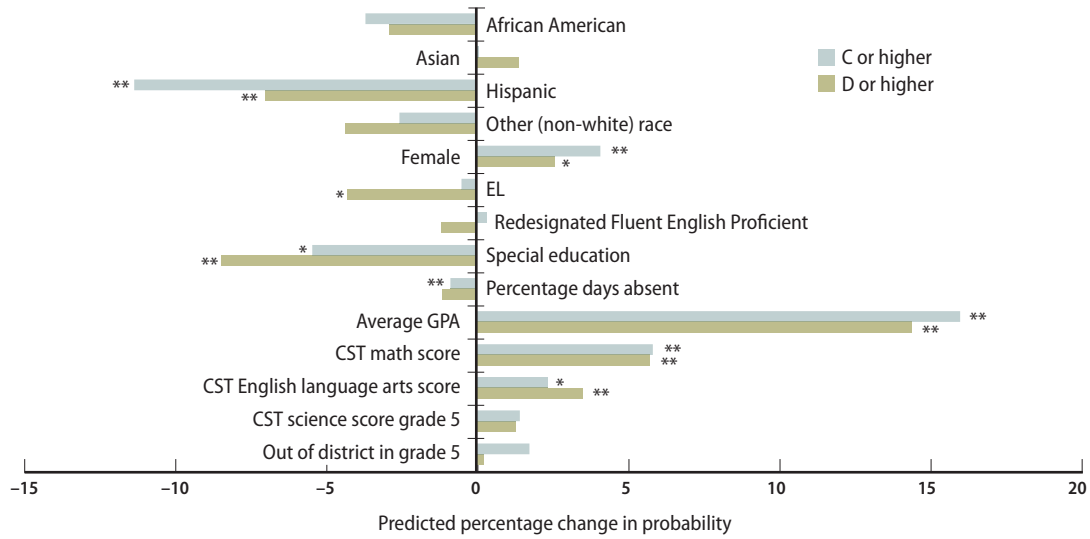
NOTE: The columns show the percentage of students in SDUSD's class of 2011 completing a–g requirements with all course grades of C or higher and with all grades of D or higher.

The female advantage over males that we saw in California as a whole also holds in San Diego, with females completing either definition of the a–g requirement at a rate that is about 10 percentage points higher than that for males. The data appear in the bottom panel of Table 5.

These descriptive results are informative, but it would be helpful to know which demographic variables are the most important predictors. For instance, Figure 1 suggests that Hispanic students are much less likely to complete a–g coursework than are white students, and Table 4 shows that ELs are also at a disadvantage. Is most or all of the Hispanic disadvantage due to the relatively high share of Hispanics who are ELs? Or, to take another tack, can achievement at a certain grade level explain most or all demographic differences?

To answer these questions, we estimated statistical models to identify the factors that drive most of the differences across groups (Figure 3). When we control for test scores and grade point average, the only racial/ethnic variables that are statistically significant are those for Hispanic students. This means that although the differences between white students and other racial/ethnic groups in Figure 1 are real, they can largely be explained by differences among these groups in grade point average and test scores. It is interesting to note that the predicted effects of being an English Learner are negative but small and only weakly statistically significant for the model of completion with grades of D or higher. Thus, many of the differences in completion rates between EL and non-EL students noted above can be largely accounted for by differences in other variables that measure grade 6 achievement and GPA. Grade 6 GPA is strongly predictive of a–g completion by either measure: A one-point increase in GPA is predicted to increase the probability of completing the a–g requirements (with either letter grade requirement) by roughly 15 percentage points. Percentage of days absent in grade 6 is a negative predictor of a–g completion. So is participation in special education, which suggests that as more students in special education begin to take a–g courses, teachers will need supports to address their needs.

Figure 3. Modeling using grade 6 student data shows that grade 6 GPA is a critical factor in determining students' probability of completing a–g requirements



SOURCE: Authors' calculations based on SDUSD data.

NOTES: Results are from two probit models—one for the probability of completing a–g courses with a grade of C or higher and another using D or higher as the requirement. With the exception of the grade 5 science California Standards Test (CST) score, all explanatory variables refer to data gathered when the student was in grade 6. Explanatory variables include those shown above plus an intercept and an indicator for the science score in grade 5 being missing. (Because just under a tenth of students in the class of 2011 are missing grade 5 science scores, we include an indicator variable for missing this science score, while setting the science score to zero in this case.) Each bar represents the predicted percentage change in the probability of the student completing the a–g coursework, with either a grade of D or higher or a C or higher. With the exception of the grade 5 science CST score and an indicator variable for this variable not being available, all other explanatory variables are measured in grade 6. For the demographic variables, the comparison student is a white male who is not EL and not participating in special education. The test score estimates show the predicted effect of a one standard deviation increase in the test score (using statewide test score distributions). The figure also shows the predicted effect of a one point increase in GPA and a one percentage point increase in days absent.

* and ** indicate significance at the 5 percent and 1 percent levels, respectively.

Variation among Schools

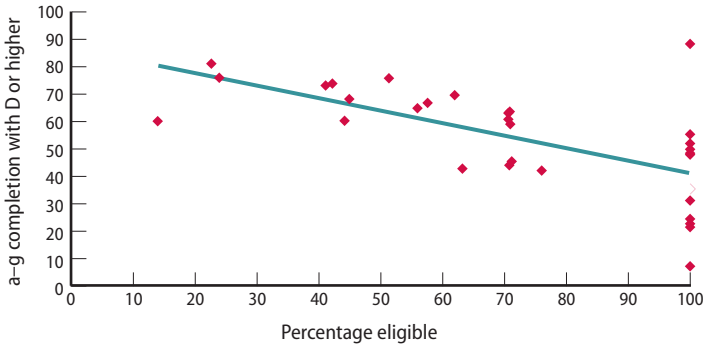
Figure 4 shows the relation between schools with high percentages of economically disadvantaged students and their students' a–g completion rates. In some high-poverty schools, large numbers of students are meeting a–g requirements, but the general trend is that students in schools with large percentages eligible for meal assistance tend to do worse than students in schools with lower percentages of these students.[5]

Only 42 percent of graduates in the class of 2011 completed the a–g sequence of courses with a C or higher as required by UC/CSU.

How Far Short Are Students Falling?

Only 41.8 percent of graduates in the class of 2011 completed the a–g sequence of courses with a C or higher as required by UC/CSU; only 61.1 percent met the more lenient SDUSD criterion of D or higher (Table 3). Does this imply that the graduation rate will plummet when students in the class of 2016 in San Diego reach grade 12? The answer to this question depends on how many courses the 39 percent of graduates in the class of 2011 who failed to meet the requirements with a grade of D or higher needed to complete.

Figure 4. Schools with high percentages of students eligible for meal assistance tend to have lower a–g completion rates



SOURCE: Authors' calculations based on SDUSD data.

NOTE: Each diamond represents an individual SDUSD high school and the percentage of 2011 graduates at that school completing a–g requirements with all grades of D or higher.

The a–g On Track Model: Indicators of student success

In conjunction with this report, we are releasing the "a–g On Track Model" that we developed to help school districts make student-level predictions based on many of the variables we used in our research. We dropped the variables of race and ethnic background because they have little explanatory power and because we believe that many districts will find it more useful to focus on grades and test scores when identifying students in need of support to complete a–g coursework.

Using data from graduates at SDUSD in the class of 2011, we estimated two statistical models of a–g course completion, with the goal of painting a portrait of the academic characteristics of students in grades 6 and 7 who went on to complete the a–g requirements overall and for the key subject areas of mathematics, English, science, social studies, and foreign language.

We offer two models—one using grade 6 data and one using grade 7 data—because in some districts grade 6 is in elementary school, and GPAs may be unavailable.

The model not only predicts the probability of grade 6 (or grade 7) students completing the overall and subject-specific a–g requirements but also calculates how many would be identified for assistance if, for example, a district decided to provide remediation to all students with a predicted probability of completion below 30 percent.

The model explains actual a–g completion rates quite well for the class of 2011, but it may need to be updated once all students are expected to complete the a–g courses.

Results are similar but not identical to the model shown in Figure 3. The single best predictor, in terms of both statistical significance and the size of the effect, is grade 6 or 7 GPA: A 1-point increase in GPA is associated with a roughly 15 percentage point increase in the chances of completing the a–g courses using either letter grade requirement. Being an EL student or participating in special education is negatively associated with a–g completion. CST scores in mathematics and English, and to a much lesser degree science, are positively associated with a–g completion.

Our spreadsheet and user's manual are available from PPIC (www.ppic.org/main/dataset.asp?i=1336) and the San Diego Education Research Alliance (http://sandera.ucsd.edu/resources/index.html).

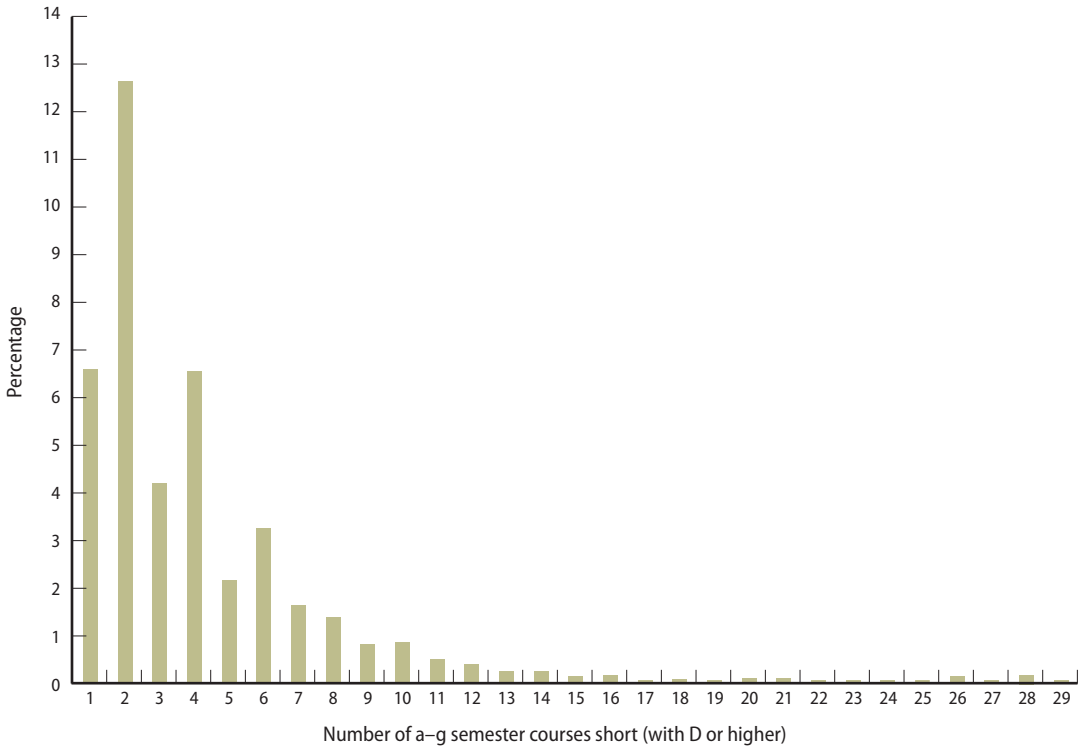
This work builds on recent research published with a coauthor that focuses on passage of the California High School Exit Exam (CAHSEE). The CAHSEE Early Warning Model can also be downloaded from PPIC (www.ppic.org/main/dataset.asp?i=1234) or the SanDERA website.

For graduates who did not meet the a–g criteria (using the D or higher criterion), we calculated the number of courses that students needed to complete in each a–g category and overall. The median student (that is, the student in the middle of the group of students who graduated without completing the new a–g requirement) needed between two and three semesters of a–g coursework to meet the graduation requirements (Figure 5). Slightly more than one-third of all graduates in the class of 2011 (34%) were one to six a–g courses short of meeting the new requirements. Given that a typical course load is six classes per semester (12 per year, and a total of 48 spanning grades 9–12), these students would probably have had space in their schedules to take as many as six semesters of a–g courses to meet the new graduation requirement. The 5 percent of graduates who were 7 to 12 courses short would need to take up to two full semesters of a–g coursework to meet the requirement, and the 0.8 percent of graduates who were 13 to 18 courses short would need as many as three full semesters to complete the requirement. But much of the a–g coursework is sequential—for example, students cannot take more than one Spanish class at a time. Thus, it might take these students significantly more time to complete the a–g course sequence.

We looked at the same results by subject area to understand the degree to which students needed to complete a sequence of courses over multiple semesters (Table 6). It is important to note that some students fell short in more than one subject area—for instance, some of the 6.9 percent who were one course short in English were also among the 14 percent who were one course short in mathematics.

For mathematics, we show the total number of courses short, but we also show the percentage of students who did not complete specific mathematics courses. The typical order

Figure 5. The median 2011 graduate who did not complete a–g coursework would have been two to three semesters short of the new a–g graduation requirements



SOURCE: Authors' calculations based on SDUSD data.

NOTE: The bars show the percentage of graduates by the number of a–g courses whose requirements they fell short of completing with all course grades of D or higher.

Table 6. Many students were more than two courses short of meeting the a–g requirements in foreign language, English, and math

a–g requirement	Number of courses short of a–g requirement: 1	2	3	4	5	6	7	8	Overall % falling short
	Percentage of students short of meeting the requirement								
Social studies (a)	3.8	2.8	0.6	0.6					7.9
English (b)	6.9	4.8	1.5	1.3	0.3	0.5	0.2	0.4	16.0
Math overall (c)	14.0	4.7	2.1	1.8	0.3	0.2			20.5
Algebra 1	1.7	2.7							
Geometry	2.8	2.7							
Intermediate algebra	15.1	3.5							
Science (d)	1.5	1.7	0.2	0.5					3.8
Foreign language (e)	3.4	9.5	2.1	7.8					23.9
VAPA (f)	5.6	2.5							8.0
College prep elective (g)	0.6	0.6							1.2

SOURCE: Authors' calculations based on graduates in the class of 2011.

NOTES: The columns show the percentage of graduates who fell short by one to eight semesters of each a–g requirement and the overall percentage of graduates who fell short, for the subsample of graduates who did not complete the a–g requirements with all course grades of D or higher. The final column totals are subject to rounding error.

in which mathematics coursework is taken is algebra 1, geometry, and intermediate algebra. Notably, 4.4 percent of graduates did not complete algebra 1, the first course in the sequence. The percentage of students who did not complete intermediate algebra greatly exceeds the percentage of students who were one course short in mathematics. This is because many students who did not complete this course had also not completed one or more lower-level mathematics courses.[6]

The subject area in which most students were more than two courses away from fulfilling the a–g requirements was foreign language (9.9%), followed by mathematics (4.4%) and English (4.2%). A number of graduates were quite close to fulfilling the a–g requirement, but as the table shows, many were several courses short. These students could not simply have added a course or two in their final year; rather, they were more than a full year short of meeting the requirement in a given area. Although most graduates are able to complete algebra 1 and geometry, they fall short of completing the intermediate algebra requirement. This may be because intermediate algebra is not currently a requirement for graduation—students can take unifying algebra and geometry instead.

Again, these findings do not necessarily mean that graduation rates will plummet in spring 2016 when the new requirement takes effect, because students in the class of 2016 and their teachers are aware of the new requirements. But the numbers suggest that the district's teachers and counselors will need to work intensively with struggling students to prepare them to take and pass the full complement of a–g courses.

Given that English is an area that poses a particular challenge, it is natural to wonder how EL students will fare with the new curriculum. Although many of SDUSD's English Learners are reclassified as RFEP before entering high school and enrolling in UC-approved English coursework, EL students who have not yet been reclassified continue to take English as a second language (ESL) courses;

District teachers and counselors will need to work intensively with struggling students to prepare them to take and pass the full complement of a–g courses.

except for the most advanced ESL course, these do not fulfill the a–g requirement for English.

High School Graduation and College Enrollment for the Class of 2011

The motivation for many large urban districts in California to require that all students complete the a–g course sequence is to prepare all California students to attend college in either the UC or CSU systems or colleges that have even higher entrance requirements. However, if large numbers of high school graduates intend to enroll in private colleges in California or out-of-state colleges with admissions requirements that differ from those of UC/CSU, students who fall short of the new requirement may be prevented from attending college because they fail to earn a high school diploma. Conversely, it is possible that a number of students complete the a–g course sequence with grades of C or higher but elect not to attend a four-year university. If these numbers are already high, it raises doubts about whether increasing a–g completion rates will necessarily boost college attendance markedly.

To assess these possibilities for the class of 2011, we gathered data on students' postsecondary enrollment at two-year and four-year universities in 2011–2012, in the academic year after the class of 2011 graduated from SDUSD (Table 7). Our data source is the National Student Clearinghouse, which has postsecondary records for two- and four-year colleges and universities that account for 93 percent of postsecondary enrollment nationwide.

The table also shows the number and percentage of graduates enrolling in either UC or CSU. Of the 32.3 percent of graduates who enrolled in a four-year institution, about two-thirds (or 22.3% of 2011 graduates) enrolled in UC or CSU. An additional 37.9 percent enrolled in a community college. In other words, 70 percent of graduates enrolled in a postsecondary institution in the year after graduation, but only 22 percent enrolled in the UC and CSU systems. The next column shows that only 13.8 percent of graduates who fulfilled the UC a–g requirements did not enroll in postsecondary education, but one quarter attended community college. The concern expressed above that a–g completion may not be associated with postsecondary attendance does not seem to be a major issue.

The most fascinating result here is that 12 percent of graduates who did not meet the a–g requirements (with grades of C or higher) nonetheless enrolled in a four-year college in 2011–2012. Under the new graduation policy, these students would not have earned a high school diploma and could have been kept out of college. Of the 12 percent of graduates who did not complete a–g but still attended a four-year college, more than half (6.9%) enrolled in a UC or CSU university. District officials believe that most of these students were admitted to a UC or CSU based on exceptions to university entrance requirements or

Table 7. UC a–g completion leads to higher rates of enrollment in four-year colleges than in two-year colleges

	Graduates		Graduates who completed UC a–g (2,690 students)	Graduates who did not complete UC a–g (3,743 students)
Postsecondary enrollment	Number	Percentage	Percentage	Percentage
Any 4-year college	2,079	32.3	60.6	12.0
UC/CSU	1,437	22.3	43.8	6.9
2-year college	2,439	37.9	25.5	46.8
Did not enroll in college	1,893	29.4	13.8	40.6
Total	6,433	100.0		

SOURCE: Authors' calculations.

NOTES: The final two columns divide graduates into those who completed the a–g course sequence with all course grades of C or higher and those who did not. Totals may not sum as a result of rounding.

completion of coursework that did not appear on district transcripts (e.g., online credit recovery courses or courses taken at a community college or an independent world language school). Under the new graduation requirement, some of these students would not have graduated and thus could have been kept out of college.

Policy Implications

Implications for San Diego and Other Districts

The evidence suggests that SDUSD will need to devote immediate and sustained attention to all students in the classes of 2016 and later as they enter middle and high school to ensure that they are on the right path to complete a–g course requirements. Students who enter high school with low grades and test scores are likely to struggle to meet the new graduation standard, and the challenge will be particularly daunting for English Learners. Only 35.2 percent of EL students who earned high school diplomas in 2011 completed the a–g requirements with grades of D or higher. The completion rate for nongraduates was even lower.

Students in the class of 2016 will probably have higher success rates because of their advance knowledge of the new requirements, but they will need constant monitoring and support. Counselors at the middle and high school levels will need to work more closely than ever with students to develop plans for their path to graduation, because the new policy requires changes in course-taking behavior and student achievement well before grade 8. And, because completion of foreign language coursework is not currently a graduation requirement in SDUSD, it may be particularly challenging for the district to hire enough additional foreign language teachers to ensure that all students have access to this coursework, especially at the middle school level.

Finally, even though the new a–g policy was approved by the SDUSD Board of Education before students in the class of 2011 entered high school, many students and parents may not be aware that new coursework is required for graduation. District administrators will need to develop a range of effective communication strategies to ensure that students, parents, and teachers are aware of the new graduation requirements so that, starting in elementary schools, curriculum and pedagogical approaches evolve to keep students on track to take and complete a–g coursework in middle and high school.

A related challenge is associated with the August 2010 adoption of the Common Core State Standards in California. Because the criteria for a–g coursework must align with state standards—and new standards have been adopted—it is likely that content and instructional approaches employed in a–g coursework will change, making professional development for teachers a high priority for districts across the state.

Students who enter high school with low grades and test scores are likely to struggle to meet the new graduation standard, and the challenge will be particularly daunting for English Learners.

There are a number of possible side effects of the new graduation requirements imposed in San Diego and other districts—some positive and some negative. One positive result of the implementation of the new policy is that students who might not have considered enrolling in college preparatory coursework will be more likely to experience a comprehensive and rigorous course of study. A second positive result is that districts adopting the new policy are likely to implement a series of interventions and assistance programs—during the school day, outside school hours, and in summer school—to help students who struggle with the a–g courses in high school. Given the financial straits in which California school districts currently find themselves, it could be difficult for districts to fund major new interventions. In spite of this, programs to prepare and support students to successfully complete a–g coursework,

in tandem with ongoing professional development for teachers, will likely be required to help students bridge the a–g gap. In particular, substantial numbers of EL students and Hispanic students will need support. Similarly, the greater number of students in special education who will be enrolling in a–g courses argues in favor of supports for teachers to teach to increasingly heterogeneous groups of students.

HILL STREET STUDIOS

California school districts may need to implement new intervention and assistance programs to help prepare students for a–g coursework.

There are also some troubling side effects of the a–g graduation requirements. One unintended consequence of the higher graduation standard may be lower graduation rates, especially for some groups of students. Second, the content of a–g courses might be watered down, and/or failing grades may be raised to Ds, given that an F grade may prevent a student from graduating. In some districts, the default lowest grade might become a D in a–g courses.[7] Third, placing lower-performing students into a–g classes could have a negative effect on higher-performing students. For example, the entire class could proceed more slowly when students with less academic preparation join the class, or classes could become more easily disrupted if some students felt frustrated. A reform in Chicago Public Schools in the 1990s that set new course requirements for grade 9 students appears to have produced some of these side effects (see Allensworth et al. 2009; Nomi and Allensworth 2009). Fourth, it is also possible that districts will de-emphasize career and technical education in favor of a–g coursework, which would narrow the curriculum and serve both college- and career-focused students poorly.

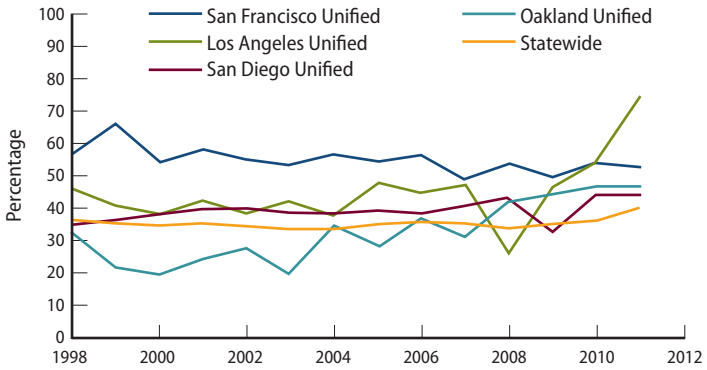
Finally, it is worth mentioning again that almost 12 percent of high school graduates in SDUSD's class of 2011 who did not complete the a–g requirements with grades of C or higher nonetheless enrolled in a four-year college in 2011–2012. The more stringent graduation requirement might prevent some students from attending university because they would not graduate from high school.

In recent years, the share of SDUSD students who completed all a–g coursework with grades of C or higher has been slightly lower than that of the other four large districts that have adopted new a–g standards. If these trends continue, it might be somewhat easier for the other districts to implement the a–g requirements for future graduating classes. All five districts have historically had varying a–g completion rates among graduates; San Francisco Unified School District generally has the highest rate and Oakland Unified School District has the lowest rate. But rates in the districts have converged over time, and all but Oakland have had a–g completion rates slightly above the state average in most years (Figure 6).[8]

But all the districts recognize that giving every student access to a college preparatory course of study is an extremely ambitious goal. In essence, these districts appear to be making an attempt to end academic tracking in their high schools without inducing large numbers of students to drop out. By setting all students on a common course toward college readiness, the districts are giving students

One unintended consequence of the higher graduation standard may be lower graduation rates, especially for some groups of students.

Figure 6. San Diego's a–g completion rate is slightly lower than that of the other districts recently adopting new standards



SOURCE: California Department of Education (2010).
NOTE: LAUSD is in the process of submitting updated a–g completion data for 2011.

who might otherwise have opted for less demanding coursework an opportunity to go to college.

LAUSD is unique among the five we have discussed in this report, in that it will require D or higher grades only for the class of 2016, with subsequent classes required to achieve grades of C or higher on the a–g courses to obtain a high school diploma. Unless LAUSD students are far higher achieving than students in SDUSD, this new permanent higher standard is likely to prove an extraordinary challenge to students in Los Angeles.

Districts that are in the process of implementing new graduation requirements probably can learn about possible effects of the reform by examining what happened in San Jose Unified School District, which has required that the classes of 2002 and later complete the a–g course sequence with grades of D or higher. San Jose's a–g completion rates with grades of C or higher do not seem to have risen dramatically as a result of the policy. Data posted on the California Department of Education's website indicate that 36.8 percent of San Jose's graduates in the class of 2001 met a–g requirements with a C or higher (the year before implementation of the new graduation policy); 40.3 percent of students in the class of 2011 did so.

A study by Education Trust–West (2010) suggests that graduation rates in San Jose did not fall, and that grade point averages did not change, as a result of the policy. Did adoption of the a–g policy result in changes in grading practices or increases in student opt-outs? The scope of this report does not permit us to examine changes in San Jose's grading practices. However, the *Los Angeles Times* has addressed the issue of opt-outs. A recent article (Blume and Butrymowicz 2013) included a troubling report that many of San Jose's high school students—most of them minority students—sidestep the a–g graduation requirement by transferring to alternative high schools that are not subject to the a–g mandate. Could it be that the very students who the policy was designed to support are now even less likely to enroll in college preparatory coursework? Clearly, a number of questions related to San Jose's implementation of the a–g graduation requirement remain, and school districts across California would benefit from further study of the district's implementation of the policy.

Implications for UC and CSU

It is unlikely that there will ever be a time when all students attend four-year colleges or that the postsecondary sector will have the capacity to enroll all high school graduates.[9] There was never a consensus that all students should earn bachelor's degrees or higher. But the a–g requirement for high school graduation can be justified as a way for all schools to give students a legitimate chance to attend university.

Both the UC and CSU systems have experienced intense political pressure to enroll more students from underrepresented backgrounds (e.g., low-income students, African American students, and Hispanic students). It is not clear whether the districts that adopt the a–g requirements will graduate more students from these backgrounds who enter the UC and CSU systems. The percentage of underrepresented students who graduate having completed the a–g course sequence with grades of C or higher should rise along with the increasing number of students taking these courses. But there are three countervailing possibilities: negative peer effects, changes in the qualifications of those teaching a–g courses, and the effect on the flow of students through community colleges into the UC and CSU systems. First, as mentioned above, if there

were negative peer effects from placing lower-performing students into a–g classes, the higher-performing students in these classes might have more difficulty meeting the a–g criteria. Second, a major expansion of a–g course offerings could result in the assignment of less qualified and less experienced teachers to these classes. Third, high school graduates who do not complete the a–g requirements with grades of C or higher have another route into both the UC and CSU systems. They can enroll in community college after high school. If they excel in their coursework at the community college, they can become eligible to transfer to either university system later on, ideally after two years of full-time study.

Paradoxically, then, the percentage of underrepresented students from these districts who attend UC or CSU is likely to rise eventually, but enrollment might stay the same or even decrease in the years immediately after the new policy is implemented.

Implications for Career and Technical Education

President Obama argues that high schools in the United States face the dual goals of preparing students for college and careers. Indeed, most high schools offer a set of CTE courses to prepare students for a variety of careers that may or may not require a bachelor's degree. Implementation of a–g graduation policies may have unintended consequences for CTE courses. Our calculations using SDUSD data through 2009 suggest that only about 7 percent of CTE courses have been approved for a–g credit. (That percentage is probably higher by now, as the district has been working with the UC to obtain a–g designation for many CTE courses.) Will districts requiring that all high

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Bridging the gap between current norms and the new graduation requirements in San Diego, Los Angeles, and other major districts is essential to the career and college readiness of high school students in these districts.

school students complete the a–g course sequence drive some students out of high school because their motivation was to work after high school rather than attend college? Similarly, will these districts eliminate high-quality CTE coursework that provides all students—college-bound or not—with relevant, real world experience that might have helped them in their chosen careers? Districts implementing the a–g requirements now and in the future need to be aware of these issues.

Conclusion

Three years from now, students in the class of 2016 in San Diego will need to have completed the a–g course sequence to graduate. This policy marks a bold attempt to bring closer to reality President Obama's goal of career and college readiness for all. Our retrospective look at a–g completion rates for the class of 2011 suggests that course-taking among San Diego students will need to change quite dramatically. Groups facing particular challenges include students in special education, English Learners, and Hispanic and African American students. The other districts around the state that have recently implemented similar policies will face similar challenges. Constant communication among teachers, students, and their parents seems key to the new policies' success. Academic supports for students as well as for teachers who will be teaching more heterogeneous a–g classes than in the past are also crucial.

Nothing in this report should be taken to mean that these new graduation policies will necessarily fail. But districts will have to work extremely hard to ensure that students bridge the gap between the current norms and the new requirements. One key step that districts should take is to identify students at risk of not completing the new course requirements at an early age and to work with them intensively. The a–g On Track Model published as an accompaniment to this report provides one tool that may prove helpful to districts in carrying out the first half of this prescription—identifying middle school students unlikely to thrive under the new requirements. Armed with this knowledge, districts will still face the difficult but important work of supporting these at-risk students so that they remain on track to complete the a–g courses and, perhaps, to attend college. Additionally, San Diego should consider extending this study in order to document the progress of students in the class of 2016 toward meeting the new a–g graduation requirements. By following the first cohort of students bound by the new policy, the district will be better able to identify and address specific challenges related to coursework, pedagogy, communication, and student support. ●

Technical appendices to this report are available on the PPIC website:
http://www.ppic.org/content/pubs/other/413JBR_appendix.pdf

Notes

[1] For instance, the Equality Alliance of San Diego, an organization that is partly funded by the ACLU, played a key role in lobbying the San Diego Unified School District to adopt the a–g requirements. This organization displays on its website a report on a–g completion in San Diego, authored by the Education Consortium of San Diego County (2010), which received support from the ACLU and the Equality Alliance of San Diego.

[2] We compare these districts' completion rates below.

[3] UC a–g completion rates posted by the California Department of Education (2010) are for all students who graduated in 2011. Some of these students may have been members of earlier "class of" cohorts (that is, students who took longer than four years to complete graduation requirements). As a result, the number of students included in this analysis of the class of 2011 is smaller than the number of graduates, as reported by CDE.

[4] Because SDUSD requires three, rather than two, years of science courses that meet a–g requirements, one may wonder why only 96.2 percent of graduates, rather than 100 percent, were meeting the a–g science requirement with grades of D or higher. Our analysis suggests that some students satisfied this graduation requirement by successfully completing qualifying community college coursework approved as part of a district-university partnership or in the district's Early College High School program. Similarly, students participating in the district's Joint Diploma Program (with the San Diego Community College District) may earn graduation credit for qualifying community college coursework.

[5] One school with 100 percent free/reduced-price lunch eligibility has an unusually high percentage of students who completed the UC/CSU requirements. This is an International Baccalaureate school (San Diego International Studies School). Although the school is in a less affluent part of the city, it attracts high-achieving students.

[6] In the UC system, students who do not take algebra 1 (or who take and fail algebra 1) are permitted to "validate" the algebra 1 requirement by taking and passing intermediate algebra. Therefore, students can satisfy the UC requirement with only two years of mathematics, if the highest-level course is at least intermediate algebra and they have also satisfied the geometry requirement. The same validation option is in place for the foreign language requirement, in that students who do not take (or who take and fail) a first year language course may validate the foreign language requirement by successfully completing a more advanced language course. Even though the UC accepts validated coursework, the new SDUSD policy still requires that students take three years of mathematics (to at least the intermediate algebra level) and two years of a foreign language.

[7] Education Trust–West (2010) studies this possibility in the San Jose Unified School District and reports that the GPA of graduating students in 1998–1999 and 2007–2008 was virtually identical. This evidence suggests that grade inflation has not been a major issue. On the other hand, if less academically inclined students in the earlier cohort did not take a–g courses, and similarly struggling students in the later cohort were compelled to take a–g classes, GPA should have dropped considerably on average, and it did not. Thus the finding is suggestive of either no change in grading standards or a weakening of grading standards. All that it rules out is a toughening in grading standards.

[8] We did not include data for San Jose Unified School District here because, for most of the period portrayed, it had already implemented the a–g requirement. Also, two sources (Education Trust–West 2010 and Freedman et al. 2011) report that San Jose Unified School District mistakenly reported the percentage of graduates meeting the a–g requirements with grades of D or higher rather than C or higher, between spring 2002 and spring 2007. However, the data reported before 2002 and after 2007 apparently use the UC/CSU definition based on grades of C or higher. On average, between spring 1998 and spring 2001 in San Jose, the average a–g completion rate was 38.5 percent, whereas in 2008–2011, the average completion rate was 41.5 percent; in both cases these averages are slightly above the state average.

[9] Under the Master Plan adopted in 1960, the UC and CSU systems are expected to educate the top 12.5 percent and 33 percent of California high school graduates, respectively.

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