



RESEARCH BRIEF

# Structure, Practices, and Curriculum of Small Secondary Schools in California

# District Leadership Forum

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# 1) Executive Overview

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## Key Observations

**Three of four profiled schools allow students to choose from either two or three career-themed pathways.** Students select the pathways during the application process; students' pathway decisions determine the four-year course of study they will complete. **School A** and **School C** offer three pathways. School A students may select from engineering, computer science, and business technology, while School C students choose from criminal justice, engineering, and health. Students at **School B** pursue either a performing arts pathway or an engineering pathway.

**School C functions as a stand-alone magnet school, but the other three profiled schools (i.e., School A, School B, and School D) leverage partnerships with nearby high schools to increase course offerings.** **School A** is a comprehensive high school with a magnet center; the two entities share courses to provide students with a wider array of core and elective options. Additionally, School A shares a campus with another comprehensive high school; School A students may participate in athletics and extracurricular activities at that high school, as well. **School B** and **School D** also live on or next to the campuses of comprehensive high schools. If the magnet schools do not offer the courses or have enough space for all interested students, students may choose to enroll in courses at the partner comprehensive high schools. Contacts explain that these partnerships allow small schools to provide students with all A-G required courses, as well as AP classes, electives, and pathway-specific offerings.

**The prescriptive nature of profiled magnet schools' curriculum limits the variability of student course demand.** Additional mandatory core courses and required pathway courses reduce the flexibility of student schedules. As a result, the greatest variability in student course demand manifests itself in the distribution of course levels among traditional, honors, and AP courses. Contacts report that the course subjects and number of sections for each course do not vary greatly from year to year, but the level (i.e., traditional, honors, AP) of those courses does vary. Contacts at **School C** share that administrators assign teachers to content areas, but each year they determine which level of the course each teacher will lead.

**While contacts note that most high schools offer six periods per day to students, students at three of four profiled schools enroll in at least seven periods.** **School B** students meet for seven periods each day, which administrators report allows students to more easily complete the required 260 credits for graduation. **School A** and **School C** operate on a block schedule. Students attend four classes on day A and four classes on day B. At School A, a homeroom course replaces one of the eight periods, while at School C, students choose how to spend one of their eight periods (e.g., internship, community college course, additional course).

## 2) Research Methodology

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### Project Challenge

Leadership at a member school district approached the Forum with the following questions:

- Which grade levels does the contact secondary school serve?
- In what magnet focus(es), if any, does the contact secondary school specialize?
- Approximately how many students per grade does the contact secondary school serve?
- What is the average number of students per course?
  - Does the average number of students per course differ between core courses and electives?
  - What factors affect the number of students per course?
- What is the approximate teacher to student ratio at the contact school?
- What additional credentials, if any, do teachers hold?
- How many levels of core courses does the contact secondary school offer?
  - How do contacts determine these offerings?
- Which electives does the contact secondary school offer?
  - How does the contact secondary school balance student interest and breadth of elective options with current staffing levels?
- What college prep courses does the contact secondary school offer students?
- What non-traditional delivery methods does the contact secondary school utilize?
  - If the contact school offers independent study courses, what is their structure?
  - If the contact school offers online learning options, what resources does the contact school utilize?

### Project Sources

The Forum consulted the following sources for this report:

- EAB's internal and online research libraries (eab.com)
- National Center for Education Statistics (NCES) (<http://nces.ed.gov/>)
- School websites

## Research Parameters

The Forum interviewed principals at the following secondary schools:

### A Guide to Schools Profiled in this Brief

School	State	Grade Levels	Approximate Enrollment	Magnet and/or Charter School Status
School A	CA	9-12	500	Magnet: No, but hosts a magnet center Charter: No
School B	CA	9-12	500	Magnet: Yes Charter: Yes
School C	CA	9-12	700	Magnet: Yes Charter: No
School D	CA	9-12	400	Magnet: Yes Charter: No

# 3) Structure and Curriculum of Small Secondary Schools

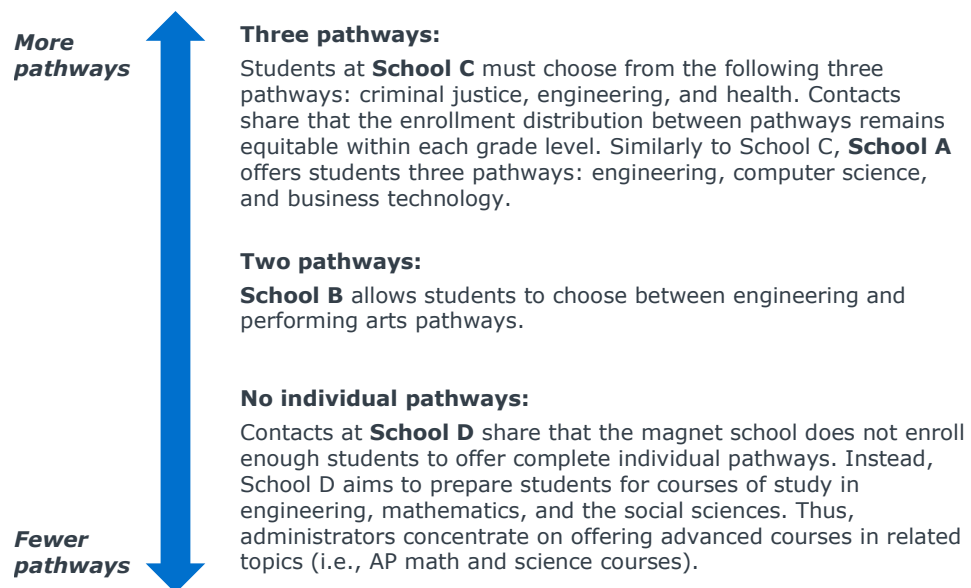
## Courses of Study

### Offer Multiple Pathways of Study to Allow for Individualized Student Experiences within Magnet School

Students at three of four profiled schools choose career-specific pathways within their respective high school. Students designate which pathway they wish to pursue at the time of application to the school. The pathways determine the students' curriculum throughout their four years in high school. Contacts at **School C** note that students may change pathways; however, it becomes increasingly more difficult to do so as semesters pass, because each pathway requires students to follow a unique four-year career-specific course sequence.

Contacts at School C note that for a school to receive funding through the Carl D. Perkins Career and Technical Education Act of 2006, instructors who teach career-based electives (i.e., pathway courses) must hold a Career Technical Education teaching credential. Additionally, instructors who teach engineering courses at profiled schools must attend a two-week training for each course to learn the course material and related software.

### Pathway Options for Students at Profiled Schools



### Consider Increasing Graduation Requirements to Ensure Students Graduate Ready for College or a Career

Contacts note that their schools maintain a greater number of graduation requirements than typical high schools in California. **School D** requires students to enroll in additional core courses (i.e., an additional year of lab science, mathematics, world language, and history or social science). Students at **School B** and **School C** must complete four years of mathematics, science, and career-specific courses.

The additional mandatory core courses and/or required pathway courses limit the amount of flexibility each student has in his/her schedule. Because pathway

curriculum often prescribes the electives in which students must enroll, students primarily choose the level (e.g., traditional, AP) of their core courses. As a result, contacts note that student demand for each course does not fluctuate greatly from year to year. Examples of prescriptive pathway curriculum are found in the tables below.

### **Mandatory Curriculum for *School B's* Engineering Pathway**

<b>Grade Level</b>	<b>Courses</b>
<b>Ninth grade</b>	<ul style="list-style-type: none"> <li>• English 1 Composition or English 1 Accelerated</li> <li>• Algebra or Geometry</li> <li>• Earth Science or Chemistry</li> <li>• Spanish 1 or French 1</li> <li>• Introduction to Engineering Design</li> <li>• Physical Education</li> </ul>
<b>Tenth grade</b>	<ul style="list-style-type: none"> <li>• English 2 Composition or English 2 Honors</li> <li>• Geometry or Algebra 2 or Pre-calculus</li> <li>• Biology</li> <li>• World History or World History Honors</li> <li>• Spanish 2 or French 2</li> <li>• Digital Electronics</li> <li>• Physical Education</li> </ul>
<b>Eleventh grade</b>	<ul style="list-style-type: none"> <li>• English 3 Composition or English 3 AP</li> <li>• Algebra 2 or Pre-calculus or Calculus AB AP</li> <li>• Earth Science or Chemistry or Chemistry AP or Physics or Physics AP</li> <li>• US History or US History AP</li> <li>• Spanish 3 or French 3</li> <li>• Principles of Engineering and Computer Integrated Manufacturing</li> <li>• Biotechnical Engineering and/or Aerospace Engineering and/or Civil Engineering and Architecture</li> </ul>
<b>Twelfth grade</b>	<ul style="list-style-type: none"> <li>• English 4 Composition or English 4 AP</li> <li>• Calculus AB AP or Calculus BC AP or Statistics AP</li> <li>• Chemistry AP or Physics or Physics AP or Biology AP or Computer Science AP</li> <li>• Civics/Economics or Civics/Economics AP</li> <li>• Spanish 4 AP or French 4 AP</li> <li>• Engineering Design and Development</li> <li>• Biotechnical Engineering and/or Aerospace Engineering and/or Civil Engineering and Architecture</li> </ul>



## Mandatory Curriculum for a Student on the Criminal Justice Pathway at School C

Grade Level	Courses
<b>Ninth grade</b>	<ul style="list-style-type: none"> <li>• English or English Accelerated</li> <li>• Algebra or Geometry</li> <li>• Biology or Biology Accelerated</li> <li>• Drawing and Painting</li> <li>• Physical Education</li> <li>• Introduction to Law</li> <li>• Optional elective(s)</li> </ul>
<b>Tenth grade</b>	<ul style="list-style-type: none"> <li>• English or English Accelerated</li> <li>• Geometry or Intermediate Algebra</li> <li>• Chemistry or Chemistry Honors</li> <li>• Spanish or Spanish for Spanish Speakers</li> <li>• Physical Education</li> <li>• Criminal Justice and Law</li> <li>• Optional elective(s)</li> </ul>
<b>Eleventh grade</b>	<ul style="list-style-type: none"> <li>• English or AP Language and Composition</li> <li>• Intermediate Algebra or Pre-calculus or Statistics or Trigonometry or Functions or AP Statistics or AP Calculus</li> <li>• Forensics</li> <li>• Spanish or Spanish for Spanish Speakers</li> <li>• Forensic Science</li> <li>• Optional elective(s)</li> </ul>
<b>Twelfth grade</b>	<ul style="list-style-type: none"> <li>• CSU: ERWC or AP Literature and Composition</li> <li>• Functions or Statistics or Trigonometry or AP Statistics or AP Calculus</li> <li>• Physics or AP Chemistry</li> <li>• Spanish or AP Spanish Literature or AP Spanish Language</li> <li>• Government/Economics</li> <li>• Senior Capstone: Public Service through the Crime Lab</li> <li>• Optional elective(s)</li> </ul>

## Course Scheduling

### Adapt Course Offerings to Student Demand Annually through Early Distribution of Course Request Forms

To accommodate the needs of all three pathways each year, administrators at **School C** organize a master schedule development committee. Department chairs, one or two teachers working through an administrative credential program, counseling staff, and administrators serve on the committee. Contacts emphasize that the master schedule should be based on student demand rather than staff requests. Prior to any master schedule development committee decisions, administrators collect student course request forms and enter them into the school database. Students typically complete course request forms after the end of the first semester.

The committee attempts to keep course offerings consistent from year to year, but offerings often change due to fluctuations in student demand (e.g., high demand for AP courses). Contacts note that the largest variable in forecasting annual student demand is the distribution of traditional, Honors, and AP courses. For example, one year there may two sections of traditional ninth grade English and four sections of accelerated ninth grade English, and the next year six sections of accelerated ninth

grade English. Because of the variability in student demand, administrators assign teachers to content areas, but do not specify which level of the courses they will teach. Contacts at School C add that in some years, the school does not offer any traditional sections due to low student demand (i.e., there were no traditional Biology courses in the 2016-2017 school year).

## Assemble Cohorts in Each Grade to Encourage Students to Pursue Interdisciplinary Projects within their Pathway

After reviewing student course request forms, administrators at **School C** determine which three courses (i.e., one pathway course and two other courses) in each grade level and pathway can form a cohort. Students in a cohort enroll in the same section of a course for each of the three subject areas. For example, in tenth grade, some students may attend history, science, and their pathway course with the same group of students. Contacts at School C report that administrators successfully place close to 95 percent of students in cohorts each year. At **School B**, administrators also design cohorts and encourage teachers to connect cohort courses through integrated projects. Most often, administrators connect students' engineering and English classes in ninth and tenth grade.

Administrators at both schools report that it is easier to organize ninth and tenth grade students into cohorts, because these students share a more prescribed schedule of core courses and electives. By eleventh and twelfth grade, students must determine how to integrate projects between their classes on their own, as cohorts become less logistically feasible due to the large array of courses from which to choose.

### Example of an Integrated Cohort Project at **School B**

*Each fall, ninth and tenth grade students organize and host a festival for which:*



English classes prepare and perform one-act plays.



Social science classes study the origin of the holiday.



Math courses plot dance positions with mathematical equations.



Graphic arts classes design and develop advertisements.

## Establish an Alternative Schedule to Facilitate Project-Based Learning and Larger Student Course Loads

One of the four profiled schools (i.e., **School D**) operates on a traditional six-period schedule. While **School B** offers students seven periods per day, **School A** and **School C** function on a block schedule. Administrators at School B report that the additional period ensures students can complete all 260 credits prior to graduation. Contacts explain that the additional period resulted from a negotiation with the teacher's union.

School A and School C students meet for each course every other day. At School A, each period lasts 90 minutes and one of students' eight block periods is reserved for homeroom. Contacts at School A state that the block schedule enables students to take additional courses (i.e., eight courses rather than six) and allows for project-based learning. For example, the longer course periods allow engineering courses time to complete complex group activities. At School C, administrators guarantee

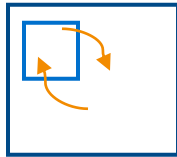
Contacts at **School A** highlight that the block schedule requires teachers to teach six periods with two planning periods, rather than five courses with one planning period.

seven periods to each student; if additional space is available in course sections, students can opt to take an eighth period of courses during their free period. However, contacts report that most students utilize their free period for an internship, community college course, or to complete homework and projects for one of their seven courses. Contacts at School C state that having seven periods allow students to more easily complete all A-G and pathway requirements.

### **Collaborate with Comprehensive High School to Increase Number of Available Opportunities for Magnet Students**

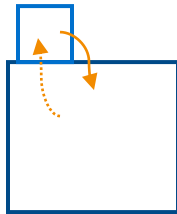
Three of four profiled schools collaborate with comprehensive high schools to expand the array of offerings available to magnet students. Contacts explain that administrators link the offerings of the comprehensive high school with the magnet school's offerings to ensure magnet students have access to all A-G requirements, AP courses, electives, and pathway-specific thematic offerings.

## Structure of Magnet School/Center Partnership with Comprehensive High Schools at Profiled Schools



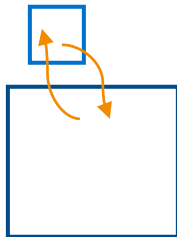
**Magnet center within comprehensive high school**

**School A** is a comprehensive high school (i.e., not a magnet high school) that hosts a magnet center. Close to 25 percent of School A students belong to the magnet center (i.e., the business and technology pathway). School A students in the magnet center may enroll in regular School A courses (e.g., health, physical education), and non-magnet students may enroll in magnet courses (e.g., Principles of Engineering). Contacts at School A report that for a course to be considered a magnet course, 75 percent of students in the course must be magnet students. Similarly, for a teacher to be considered a magnet teacher, four of six courses in his/her teaching load must be magnet courses. Additionally, School A shares a campus with another comprehensive high school. All School A students (i.e., magnet and non-magnet) may participate in athletic activities (e.g., soccer, band) at the other comprehensive high school.



**Magnet high school on campus of comprehensive high school**

**School D** resides on the campus of a comprehensive public high school. Similarly to School A students, School D students may participate in the partner high school's athletics (e.g., water polo, football) and clubs (e.g., peer leadership, robotics). Additionally, while School D students must take all core courses at the magnet school, students may take elective courses (e.g., world languages, visual and performing arts) at the partner high school if School D does not offer these courses. Contacts share that if School D did not partner with another high school, then students would have a much smaller range of electives. Next academic year, partner high school students will be eligible to enroll in School D for AP courses that the comprehensive high school does not offer. Contacts add that for School D to receive Average Daily Attendance credit for a student, the student must enroll at the magnet school for at least four periods. Because School D receives all funding for magnet students even though the partner high school instructs some of their courses, School D and the partner high school engage in a cost-sharing agreement.



**Magnet high school next to comprehensive high school**

Students at **School B** may enroll in courses (e.g., English, social science, chemistry) and participate in extracurricular activities (e.g., band, choir, peer leadership) at the comprehensive high school next door. Additionally, because School B does not own athletic facilities, students must fulfill their physical education requirement at the partner high school. School B students also have access to AP Government and AP Spanish at the partner high school, because School B does not offer either of those courses. Students from the partner high school may, in turn, enroll in AP courses at School B that are not available on their home campus. Similarly to School D contacts, School B contacts note that the magnet academy would not be able to offer the amount of elective and AP offerings without its partnership with the comprehensive high school.

## Hire Teachers with Multiple Credentials and Teaching Interests to Reduce Teacher-Student Ratio

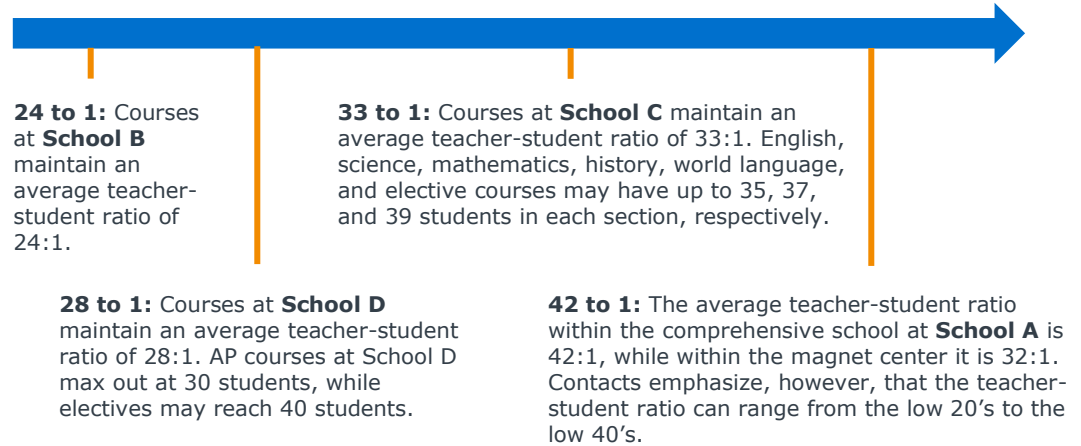
Profiled schools' average teacher-student ratios range from the mid-20s to the mid-40s. However, contacts share that within each school the teacher-student ratio of each course depends heavily upon the subject and grade level.

Profiled schools that partner with comprehensive high schools may reduce the size of their high-demand courses by sending students to the partner school for these courses. According to leaders at **School C**, schools that do not partner with a comprehensive high school must pay even closer attention to certain aspects of staffing. For example, when administrators at School C hire teachers, they seek instructors with multiple credentials or core-subject staff who are also willing to teach pathway courses (e.g., a mathematics teacher willing to teach engineering courses).

Additionally, contacts share that administrators search for teachers who are willing to teach several courses within one subject area (e.g., Algebra I and Pre-calculus).

Additionally, contacts at School C note that administrators should reference teachers' union regulations on maximum number of students when setting enrollment goals. For example, at School C, an English teacher can only teach up to 180 students per week. As a result, administrators for the school aim to keep enrollment close to a multiple of 180 to maximize teacher capacity. Contacts at School C caution that if a school looks to increase pathway enrollment, the school should expand by one section rather than by 10 to 15 students.

## Average Teacher-Student Ratios at Profiled Schools



## Primary Reasons for Above Average Teacher-Student Ratios in Courses at Profiled Schools



**Lower-level core courses:** Ninth and tenth graders see less flexibility in the levels of core courses they may take. As a result, core courses tend to see higher teacher-student ratios. Contacts at **School B** estimate that the average teacher-student ratio in ninth and tenth grade courses is 31:1, compared to the school average of 24:1.



**Courses unavailable at partner comprehensive high school:** Partner comprehensive high schools do not offer the course that the magnet center/school sees high demand. For example, the high school next to **School B** does not offer Earth Science. Thus, all students who wish to take the course must fit into the magnet academy's sections.



**Single course section:** Administrators share that when a course only has one section (e.g., AP Statistics), then the teacher-student ratio tends to be higher. All students who wish to take the course must do so during that one period.



**Limited number of certified teachers:** Certain courses, such as the Project Lead the Way engineering courses, require teachers to hold a special certificate. Because of the large expense associated with the training for these courses, not all teachers attend the training. As a result, few teachers are eligible to teach the courses, which limits the number of sections and increases the teacher-student ratio.

## Offer AP Courses that Supplement Pathway Course Content to Optimize Students' Career Preparation

**School C** students may choose between traditional, honors, and AP courses. Similarly, **School B** offers students traditional and accelerated English courses during their ninth and tenth grade years, traditional and honors World History during their tenth grade years, and an ample selection of AP courses during their last two years. Like School B students, **School D** students may also choose between traditional and

honors English sections during ninth and tenth grade. Contacts share, however, that administrators do not want to track students into or out of AP courses in their first year or two at the magnet school, so they do not focus on the development of additional honors courses. **School A** primarily offers traditional and AP courses; however, contacts report that some honors sections exist within the magnet center.

When determining which AP courses to offer at the high school, administrators at profiled schools prioritize those which best supplement the pathway courses. For example, School C offers AP Psychology, because the course can serve as a pathway course for juniors in the health pathway.

### Summary of AP Courses Offered at Profiled Schools<sup>1</sup>

Course Title	School A	School B	School C	School D
AP World History			X	X
AP English Language and Composition	X	X	X	X
AP English Literature and Composition	X	X	X	X
AP Calculus AB	X	X	X	X
AP Calculus BC	X	X	X	X
AP Physics 1	X	X	X	X
AP Chemistry	X	X	X	X
AP Biology	X			X
AP US History		X	X	X
AP Spanish Language and/or Literature		X (at partner comprehensive high school)	X	X (at partner comprehensive high school)
AP Research			X	X (coming soon)
AP Seminar			X	X (coming soon)
AP Biology		X	X	
AP Computer Science		X		
AP French Language and Culture		X		
AP Government		X (at partner comprehensive high school)	X	
AP Macroeconomics	X			

<sup>1</sup> Contacts were not able to produce an exhaustive list of AP courses during our research conversations. Thus, this chart may not include all AP courses at profiled schools.

Course Title	School A	School B	School C	School D
AP Psychology			X	
AP Physics 2			X	
AP Statistics			X	

## Supplement Elective Offerings with Extracurricular Activities and Dual Enrollment Opportunities

Three of four profiled schools leverage their partnerships with comprehensive high schools to offer students a wide variety of electives. If the magnet school/center does not offer a course, students may enroll in that course at the comprehensive high school. Students at **School C**, however, do not have that option, as the magnet school does not partner with another school. Contacts at School C share that to supplement limited elective offerings, the school offers pathway-related and non-related clubs and activities after school. For example, while School C only offers one fine arts course, students may join a fine arts, music, or performing arts club. Additionally, tenth, eleventh, and twelfth grade students may enroll in courses at the local university and community colleges if School C does not offer the courses the students wish to take. Students at **School B** may also take courses with their local community college. School B offers one community college course per semester on the academy's campus after school. The course alternates each semester between speech and history.

## Sample of Elective Courses Offered to Students at Profiled Schools

### School A

- Introduction to Engineering and Design
- Principles of Engineering
- Computer Science Engineering
- Civil Engineering and Architecture
- AP courses

### School D

- Art
- Computer Science
- French
- Spanish
- Physical Education Robotic
- Discrete Mathematics
- Marine Biology
- AP courses

### School B

- Guitar
- Keyboarding
- Dance Elements and Interpretation
- Video and Audio Production
- Stagecraft
- Graphic Arts
- Biotechnical Engineering
- Aerospace Engineering
- Civil Engineering and Architecture
- AP courses

### School C

- Elements of Oral Communication
- Introduction to Sociology/Introduction Psychology
- Environmental Science
- Yearbook
- Associated Student Body
- Study Skills
- Pathway Mentoring (i.e., support teachers in 9<sup>th</sup> and 10<sup>th</sup> grade pathway courses)
- Instrumental Music (coming soon)
- AP courses

## Employ Online Learning Technology to Facilitate Credit Recovery for Students

Contacts at all four profiled schools share that administrators do not typically offer online or independent study courses to students. Administrators may employ online courses for credit recovery purposes. However, contacts at **School D** report that even for credit recovery, administrators prefer to provide students with in-person instruction to ensure rigor. While teachers at profiled schools do not utilize technology to deliver entire courses, they do leverage technology in the following ways:

- Provide a tablet or computer to each student
- Teach internet-based mathematics curriculum with chapter outlines, tasks, quizzes, and formative assessments
- Utilize Desmos (i.e., a graphing tool)
- Employ Google Classroom (i.e., a blended learning platform)
- Complete projects using data processing software
- Employ computer aided design and drafting software
- Utilize 3-D printers and laser engravers

## Incorporate Career and College Activities into English Curriculum to Ensure Constant Preparation

English courses at **School B** incorporate college and career preparation (e.g., resume design, personal statements, interviewing). An internal survey at School B found that students viewed interview preparation (e.g., mock interviews) as the most helpful activity. Similarly, at **School D**, eleventh and twelfth grade students participate in college preparation during their English courses. Students write personal statements and apply to at least one university or community college.

Rather than incorporate all college and career preparation into English courses, **School A** administrators created a homeroom period that meets every other day. During this period, students participate in activities that help build soft skills, attend assemblies, and interact with guest speakers. In ninth grade, students focus on career awareness; while in tenth, eleventh, and twelfth grade, they concentrate on career development, career exploration, and college and career preparation, respectively.



## Central Aspects of College and Career Preparation at *School B*

Grade	Main objectives
<b>Ninth grade</b>	<ul style="list-style-type: none"> <li>• Pre-employment skills</li> <li>• Professionalism</li> <li>• Career awareness</li> <li>• Career inventory and personal assessment</li> <li>• Communication skills</li> <li>• Presentation skills</li> </ul>
<b>Tenth grade</b>	<ul style="list-style-type: none"> <li>• Pre-employment skills</li> <li>• Professionalism</li> <li>• Resume writing</li> <li>• Job shadowing</li> <li>• Career and college inventory</li> <li>• Presentation skills</li> </ul>
<b>Eleventh grade</b>	<ul style="list-style-type: none"> <li>• Pre-employment skills</li> <li>• Professionalism</li> <li>• Mock interviews</li> <li>• Job training</li> <li>• Career and college preparation</li> <li>• Presentation skills</li> </ul>
<b>Twelfth grade</b>	<ul style="list-style-type: none"> <li>• Pre-employment skills</li> <li>• Professionalism</li> <li>• Peer mentoring</li> <li>• Internships</li> <li>• Advanced career and college decision making</li> <li>• Senior defense presentations</li> </ul>