



Student-Centered Learning: Dozier-Libbey Medical High School

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Overview

About SCOPE

The Stanford Center for Opportunity Policy in Education (SCOPE) was founded in 2008 to foster research, policy, and practice to advance high quality, equitable education systems in the United States and internationally. SCOPE engages faculty from across Stanford and from other universities to work on a shared agenda of research, policy analysis, educational practice, and dissemination of ideas. SCOPE is an affiliate of the Stanford University Graduate School of Education and the Center for Comparative Studies in Race and Ethnicity (CCSRE) at Stanford.

About Student-Centered Practice

Student-centered practice is a school reform approach driven by student learning and a commitment to equity. Student-centered practices are flexible and responsive to students' needs. They emphasize positive and supportive relationships between students and adults in schools, which enable students to persist and succeed in academic environments that are challenging, relevant, collaborative, student-directed, and applied to real-life situations. Research shows that this is the type of setting necessary for students to develop the skills to succeed in college, career, and life. Students are assessed on their mastery of knowledge and skills and have multiple opportunities to demonstrate that mastery. Educators are supported in creating a student-centered learning environment through opportunities for reflection, collaboration, and leadership.

Student-centered practices are more often found in schools that serve affluent and middle-class students than those located in low-income communities. Addressing the opportunity gap for low-income students and students of color requires an examination of how to implement student-centered practices in schools serving those students with the most to gain from them.

Student-Centered Schools Study

The Student-Centered Schools Study, funded by the Nellie Mae Foundation, looks closely at four California high schools that use either the Linked Learning or Envision Schools model to achieve positive outcomes for all their students. These schools all serve predominately low-income students and students of color. These signature models of student-centered learning can inform efforts to address the national opportunity gap through student-centered practices.

Case Study Schools

School Type	School	Location
Linked Learning	Dozier-Libbey Medical High School	Antioch, CA
	Life Academy	Oakland, CA
Envision Schools	City Arts & Technology High School	San Francisco, CA
	Impact Academy	Hayward, CA

Linked Learning began as a state-wide district initiative funded by the James Irvine Foundation to support implementation in nine districts across the state. The program has expanded through state funding since 2011 to include nearly 70 additional local educational agencies. Linked Learning integrates rigorous academics with career-based learning and real-world workplace experiences.

Envision Schools is a small charter network focusing intently on creating personalized learning environments in which educators also create project-based assignments that foster development of 21st century skills such as critical thinking, problem solving, and collaboration.

Both of these models show clear evidence of engaging and developing high levels of proficiency for students of color, English learners, and low-income students at levels that far exceed traditional schools serving similar students. In addition, the schools in this study provide the types of learning experiences that prepare students for college and meaningful careers as well as graduating students of color, English learners, and low-income students at rates that exceed similar students in their districts and California.

Case Studies and Research Methodology

This case study is one of four written by SCOPE about student-centered practices in schools. The case studies address the following questions:

1. What are the effects of student-centered learning approaches on student engagement, achievement of knowledge and skills, and attainment (high school graduation, college admission, and college continuation and success), in particular for underserved students?
2. What specific practices, approaches, and contextual factors result in these outcomes?

The cases focus on the structures, practices, and conditions in the four schools that enable students to experience positive outcomes and consider the ways in which these factors are interrelated and work to reinforce each other.

The researchers employed mixed methods to look at the micro-level of classrooms and schools. Data collection for this study was conducted between March 2012 and

September 2013. Quantitative analysis was used to compare short- and long-term student outcomes in the case-study schools with similar students in other schools in the same district. Qualitative data collection activities included formal interviews with administrators, teachers, students, parents, and community members; observations of instruction, advisory, professional development, teacher collaboration, student exhibitions and defenses, community events, and graduations; and a review of essential documents.

Post-graduation data were a critical component to understanding the long-term impact of the schools' practices. We surveyed and interviewed graduates from each school and tracked their higher-education enrollment through the National Student Clearinghouse. Additionally, two of the schools in this study were simultaneously participating in the Study of Deeper Learning Opportunities and Outcomes funded by the William and Flora Hewlett Foundation and conducted by American Institute of Research (AIR). Rather than survey these schools twice, we used their survey results of teachers and students and used the AIR survey to collect data from the other two schools. Employing this survey enabled us to draw on the full data from the survey, which included a comparison sample of 12 additional schools.

The case studies have been verified with key members of each of the schools for factual accuracy. Details about the data collection activities for this study can be found in Appendix A.

Resources

Findings from the Student-Centered Schools Study are published in four case studies, a cross-case analysis, a policy brief, and practitioner's tool. Visit <http://edpolicy.stanford.edu/projects/633> to view these products.



Introduction

“You either just got kicked out of your house or you, being the brave teenager, decided you don’t need your parents, and you’re going to do this on your own. Today is the day you start making plans of how you’re going to live on your own,” the 11th grade health teacher instructs her students, who are all engaged in a teen-parent simulation. She informs her students that they need to move through six stations. She reminds them, “This is your time. You have to use it wisely because you have a lot of stuff to figure out before you can move out on your own.” The students move through the following stations:

- Station 1—*Job Search*: Students look online for job postings that match their current qualifications.
- Station 2—*Housing and Furniture*: Students look online for local apartments and furniture; the teacher reminds students to think about safety and services at the apartment and not just cost. Students have to write down the address, deposit, and monthly rent for each housing option they consider.
- Station 3—*Creating a Budget*: The students use real utility, food, and phone bills to make monthly budgets.
- Station 4—*Baby’s First-Year Expenses*: Using a list of types of baby items, students look online and at sales inserts from newspapers to price items. They conduct research to calculate how many diapers and how much formula and food the baby is likely to use in the first year.
- Station 5—*Childcare*: Students identify questions they would ask day care providers, including costs. The teacher encourages them to “remember you’re trusting your child with strangers. You need them to be reliable. What if they get sick? What will you do?”
- Station 6—*Community Resources for Low-income Families*: Students conduct research on community resources that might help them pay rent, supplement day care, and help them with food.

As the students work in the stations, the teacher challenges them to think about the choices they are making and to understand the complexity of real life. For example, some students want to save money by living with roommates, but the teacher encourages them to think realistically. She asks them, “Do you want your baby around people you don’t know? Will you be able to find someone who would live with you and your baby?” At the end of the day when the class comes together to reflect, some students say, “It’s stressful and it isn’t even real,” and, “You have to compromise on what you expected.” The class discusses how much was accomplished and how much harder it would be to get this information in real life. A student laments, “We just scratched the surface.” The teacher encourages the students to remember the post-secondary goals they set for themselves and to think about how a pregnancy would interfere with their goals.

This example is one illustration of how Dozier-Libbey Medical High School (DLMHS) is a different kind of high school. The school uses student-centered, experiential education to make learning relevant. DLMHS exposes students to health issues and opportunities in the health care field beyond what is offered in textbooks. The health teacher leading the simulation explains:

[The lesson] is real life, and they can use it right away. They can tell their families and friends. And that's a perfect example of student-centered learning. They're looking for the information. They're figuring out ways to apply it. And they're reflecting on it.

DLMHS has more independence than is common among district schools and, as a result, has been able to create its own vision for teaching and learning and, for the most part, shape how it implements its vision. Student-centered instruction at DLMHS is about creating authentic and rigorous experiences for students. Belief in the potential of every student has enabled the principal and staff to create a culture of caring and respect between and among teachers and students.

The school's vision statement reflects these values: "Every student valued, every student challenged, every student prepared to succeed in a changing world." Supported by their relationships with their teachers and peers, students take risks and push themselves beyond what they thought they were capable of achieving.

The school offers a rigorous college preparatory curriculum that looks very different from traditional academic instruction as students engage in hands-on, applied, and interdisciplinary experiences consistently infused with a health care focus. Teachers' steadfast commitment to mastery rather than rigid adherence to a pacing guide, coupled with in-class supports for struggling students, ensures that students can access and deeply understand the curriculum. All students are prepared and encouraged to take the coursework necessary to make them eligible for the University of California (UC/CSU) system, including a minimum of four math and science courses. The vast majority of DLMHS students go on to enroll in college.

Dozier-Libbey Medical High School Demographics 2012-2013

Size:	639
Latino:	38%
White:	22%
African American:	16%
Asian:	10%
Filipino:	9%
English language learner:	4%
Free/reduced lunch:	51%

Source: <http://dq.cde.ca.gov/dataquest/>

This case study describes the unique strengths of DLMHS's approach, the challenges and trade-offs the students have experienced, and the implications of DLMHS's experience for other schools seeking to implement different aspects of a student-centered approach. The case study includes: a description of the school and its outcomes; personalization; instruction, with a focus on the student-centered approaches; and collaboration and professional development. See Appendix A for a description of the research methodology and data sources for this case study.

School Description and Community Context

DLMHS, an autonomous, stand-alone small school in the Antioch School District, is located on the edge of town amid cow pastures and near several medical centers. Although in their fifth year, the facilities still look brand-new—not a smudge on a wall or bit of chipped paint. The staff and students take pride in keeping their school clean, and students are rewarded for keeping the school clean with free-dress days.

Founding a Different Kind of Place

DLMHS opened its doors to ninth graders in 2008 and added a grade level each year until they were fully enrolled in 2012. Responding to overcrowding in the district's two high schools, the superintendent at that time saw an opportunity to open a different kind of school—one with a career focus. In meetings with community leaders and business people on labor force needs, it became evident that the health care field would have the highest employment opportunities. Additionally, the land adjacent to the new school site was going to be developed at the same time as a medical facility. The district made the decision to open a new small school with a health care focus. The district formed an advisory committee made up of teachers, district staff, community members, school founders, and the CEO of the local hospital to oversee the school's development, including principal hiring.

The current principal, Nancie Castro, was hired in 2006, two years before the school opened. Once she was hired, she spent her time researching and visiting health-oriented pathways and academies and studying small schools research. She shared her findings with the advisory committee and together they created a vision for the school. Supported by grant money, she was able to hire the founding teachers nine months prior to opening school. The staff met twice a month to develop curriculum and school policies and focus on their vision. According to Principal Castro, “I think that was hugely successful because we were able to say this is what we do and this is why we do it and we all believe it and we're all holding kids accountable.” The planning time and ability to staff the school was critical in the school's early development of and commitment to their vision. The school was named after two local physicians who also served as school board members.

In 2008, the Antioch Unified School District applied to be a part of the Linked Learning Initiative, a statewide district initiative funded by the James Irvine Foundation to support an approach to transforming education by integrating rigorous academics with career-based learning and real-world workplace experiences. The district opted to participate in the initiative, in part, because of their observation of DLMHS's early success. In turn, DLMHS has benefitted from the district's participation in the state-wide initiative, gaining access to a wide range of professional development and curricular resources from support provider ConnectEd: The California Center for College and Ca-

reer. ConnectEd has developed a rigorous certification process for career pathways and DLMHS is just one of 28 pathways in the state to be certified.¹

A Commitment to the Community

Central to DLMHS commitment to believing in the potential of every student is to serve students who are truly representative of the community of Antioch. Founded in 1850, Antioch is one of the oldest towns in California with a long history of industry from copper and coal mining, and is rumored to be the birthplace of the milk carton.² Up until the 1970s Antioch was a relatively small and mostly white community of 28,000 but has grown rapidly since the 1990s. The boom, made up predominately of professional people of color escaping escalating housing prices and crime, changed the landscape of the community as they moved into big houses in housing developments and had incomes nearly double that of the longtime residents. With more than 100,000 residents, the community is currently 36% White, 32% Latino, 17% African American, and 10% Asian. Because commercial growth did not match Antioch's population growth, it is largely a commuter community with a highway in and out of town nicknamed the "parking lot."

Following the boom in the 1990s and 2000s, the 2008 recession hit Antioch hard, making it one of the foreclosure capitals of the state and crushing the city budget for services, such as police. As a result, Antioch suffers from high crime rates and simmering ethnic tension. According to one community activist, the school district was not well equipped to serve the changing demographics. "The schools could not really handle the kids who were coming from different places that they just didn't know how to reach." In at least partial response to this unmet need, in its first year DLMHS had 400 applications for 200 spots.

Enrollment policies have changed somewhat over the years. Currently to attend DLMHS or any of the district's schools (there are currently pathway options in all the district's comprehensive high schools), all students complete a simple application packet. The students are then placed by straight lottery into one of the district's pathways. Up until 2013, careful attention was paid to make sure that DLMHS drew proportionally from the percent average daily attendance ADA at each of the feeder middle schools so that their students are representative of the district population. In 2013, the district no longer instituted this policy and simply conducted a straight lottery. Because the school is located in the more affluent side of town, this is a policy choice that could alter the school's demographics to be less representative of the general population of Antioch. Principal Castro is analyzing the lottery data to insure that the school remains fully representative of the diversity of the district under this new policy and plans to monitor the impact of the policy change.

¹ The certification process provides a common standard for guiding pathway implementation and quality. The certification process involves a cycle of continuous improvement and a number of set standards that each school needs to meet. DLMHS became certified in 2011 and is up for re-certification in 2014.

² http://en.wikipedia.org/wiki/Antioch,_California#cite_note-Arcadia-11

DLMHS takes transfers through 10th grade but not in 11th and 12th grade as transfers would jeopardize the integrity of the instructional program. The district has a high mobility rate, 12%, so DLMHS over-enrolls its ninth and 10th grade in anticipation of a similar mobility rate. However, for the class of 2013, DLMHS lost only 24% of students over three years, from 10th to 12th grade. Some students find that despite the supports they receive from teachers, they are not prepared for the rigor at DLMHS and transfer out, knowing they can graduate with less rigorous requirements in other area schools. DLMHS students report that some who leave later regret their choice. As one 11th grade girl relayed the story of a friend who left after one semester, “She regrets it now. . . . It’s so much harder at Dozier, but you feel more prepared to do what you need to do in the real world.” A few students also leave after 11th grade or during 12th grade because they do not have enough credits to graduate. However, according to Principal Castro, DLMHS loses fewer students than the other local high schools.

Although there is a perception in the community that DLMHS is not representative of the community, the enrollment process, up until 2012, was designed to avoid that reality. As Castro states, “We have Antioch kids. We have kids and they come to us with all kinds of issues and ability levels and we’ve seen that it really works.”

Whether the population of students attending the school is fundamentally different from other district schools is difficult to determine. Teachers and students comment that the school appeals to students who may not feel that they belong in a comprehensive high school environment or for whom sports or being part of a large social scene is not important. According to one teacher:

I feel like what attracts kids to this school [is that] there’s a safety here. There’s a smallness here. It’s ok to be a geek here. Kids that are marginalized at the other schools are ‘it’ here. They’re all Antioch kids, but the kind of Antioch kid that comes here isn’t necessarily the same. . . . I have more kids here with anxiety, depression. . . not necessarily [Individualized Education Programs] IEPs. In other schools there would have been two or three in a class, but [here] I have seven or eight.

A ninth-grade student reinforces the teacher’s perspective. “Everybody here is different. The school is diverse and it’s the thing that I like about this school.” Nonetheless, parents and students express gratitude to be able to attend. One Latino parent stated:

We felt like we won the lottery when my daughter’s name got picked. . . . At the beginning, the parents are a bit more excited of what the school is than the kids are, but once they get here they understand that the preparation is a lot better than they would get at other schools, including some of the private schools.

Because of its success, DLMHS has experienced some changes in who wants to attend. Initially, students selected the school for its health care career focus but as crime has escalated, more parents want their children to go for safety reasons. As one parent explained the perception of the other high schools, “Kids get shot in [one of the district high schools] and stabbed [at the other]. This school is like a private school.” One founding teacher elaborated, “We do get to know the children better and try to help them more than at a bigger school. The environment is safer and more personable.” Some students’ lack of interest in the health care career focus can be challenging to the school as they do not want to take the required science and health courses.

The majority of parents and their children do select the school for its health care focus, however. One African American parent who also works as an educator in the district commented:

I was very excited to hear about a curriculum and a program in the school that would cater to my kids and give them a head start on understanding medical terminology, medical concepts, and just preparing them to be successful in their academic endeavors as students in college majoring in either science or something that will lead into a career in medicine.

A Latino parent stated that while he liked the focus on the medical field, his daughter liked that it was still similar to a regular high school with dances and PE. Students come in with and develop a range of health care career interests. Many students expressed interest in the health field since elementary or middle school. However, they also refine their interests based on experiences they have at DLMHS to include careers like emergency room nurse, cardiologist, orthopedic surgeon, and obstetrician. For example, one 11th-grade female student explained:

When I was little, my family didn’t make a lot of money, so they wanted me to go into the medical field, and I came here because they wanted me to, and then I wanted to too. Then in freshman year when we looked up what career we wanted to do, I looked into sports medicine specialist and now that’s what I want to do.

Student Outcomes: Opening Doors of Opportunity

Already in its first five years, DLMHS has demonstrated that its approach is conducive to student learning. The achievement of DLMHS students far exceeds other similar students in the district and state on many measures. African American and Latino students, English learners, and those who live in poverty benefit particularly from attending DLMHS, as indicated across multiple measures of Academic Performance Index (API), California Standards Test (CST) and California High School Exit Examination (CAHSEE) assessments (see Table 1). The CST is the state’s standardized test administered annually and CAHSEE is a test required for high school graduation. API is a state measure of school quality on a 1,000-point scale (with 800 being a target goal) that is derived primarily from the CST and CAHSEE exams.

Table 1: API, CST, and CAHSEE Proficiency and Pass Rates 2012-13

Item	Types of students	DLMHS	District schools	California
Growth API	All	809	740	789
	African American	776	665	707
	Latino	786	729	743
	English learners	774	719	720
	Economically disadvantaged	777	706	745
CST 11th gr ELA % proficient or above	All	70%	43%	48%
	African American	62%	31%	32%
	Latino	68%	35%	36%
	Economically disadvantaged	56%	31%	35%
CST 10th gr life science % proficient or above	All	61%	41%	54%
	African American	45%	27%	37%
	Latino	55%	37%	42%
	Economically disadvantaged	55%	36%	42%
CST biology % proficient or above	All	55%	38%	49%
	African American	48%	25%	32%
	Latino	51%	33%	37%
	Economically disadvantaged	45%	29%	37%
CAHSEE 10th gr ELA % passing	All	97%	82%	83%
	African American	100%	75%	73%
	Latino	94%	77%	78%
	Economically disadvantaged	95%	76%	77%
CAHSEE 10th gr math % passing	All	95%	78%	84%
	African American	88%	68%	71%
	Latino	95%	75%	79%
	Economically disadvantaged	94%	73%	78%

Source: California Department of Education, Dataquest, <http://dq.cde.ca.gov/dataquest/>

Noteworthy in the student test scores are DLMHS students' proficiency levels in life and biological sciences, a focus of the school. In this area, students' scores in all subgroups are far above district and state averages.

Although it has graduated only two classes, DLMHS also demonstrates initial success in the percentage of students who graduate, particularly for those students most typically underserved. Most striking, however, are the percentages of students who graduate having completed all the course requirements they need to apply to the California State University (CSU) and University of California (UC) systems (see Table 2). DLMHS's focus on college preparatory curriculum makes a vast difference in the opportunities available to its graduates versus graduates from other district high schools.

Table 2: Graduation Rates and Course Completion Rates DLMHS Class of 2012

Graduation rates and course completion rates	Types of students	DLMHS	District	State
Cohort graduation rate for class of 2012	All	97%	66%	79%
	African American	95%	67%	66%
	Latino	98%	75%	74%
	English learners	97%	60%	62%
	Economically disadvantaged	97%	70%	73%
Percent of graduates completing all courses required for UC/CSU admission	All	96%	25%	38%
	African American	94%	15%	29%
	Latino	100%	15%	28%
	English learners	92%	24%	23%
	Socioeconomically disadvantaged	95%	22%	30%

Source: California Department of Education, Dataquest, <http://dq.cde.ca.gov/dataquest/>

DLMHS's first graduating class of seniors in the spring of 2012 showed incredible post-high school college-attendance rates, as well. By midway through their freshman year, 93% of graduates had enrolled in college. Table 3 shows the types of colleges in which students enrolled.

Table 3: College Attendance Rates DLMHS Class of 2012

Type of institution	Public or private	Percent of graduates attending
2-year institutions	Public	52%
	Private	1%
4-year institutions	Public	35%
	Private	10%
Career tech training program	NA	2%

Source: National Student Clearinghouse and Interview Data

Of those attending 4-year colleges, 44% were enrolled in a CSU and 28% entered the UC system. The school projects slightly higher percentages of graduates enrolling in the CSU and UC systems for the class of 2013.

Teachers recognize that students' chance of success is far greater at a four-year college but that it can be difficult to transfer. They work one-on-one with students to convey this information. For example, during passing period after English class, one English teacher had a brief conversation with a student about the importance of enrolling in Honors College once he gets to community college. She said, "Repeat after me: I [student name] solemnly swear to make an appointment with the counselor about enrolling in Honors College so that I can transfer to a 4-year college." The student dutifully repeated her statement and followed up with a few questions about how to get in to Honors College.

Although it is early on in their college careers, DLMHS graduates appear to be doing fairly well in college. Surveyed graduates (response rate of 44%) report that in their first year, 83% are passing all their classes and 94% are planning to return as full-time students in the following year. DLMHS's focus on health care careers appears to influence a number of graduates, 51% of whom have declared a health- or science-related major by their freshman year. Majors range from nursing to molecular biology.

The culture of seeking support at DLMHS seems to have rubbed off on the graduates as 75% report using academic supports offered by the college. In addition, 72% often sought support by communicating with an instructor by email, telephone, or in person, and 55% report discussing grades or assignments with an instructor often.

In general, surveyed graduates report feeling well prepared for college. Only 19% report that college is more challenging than they expected. Ninety-six percent feel academically prepared for college-level work and 75% feel independent and confident in college. As a result of their education at DLMHS, the graduates identified the following areas in which they felt very prepared for academic work at their college (see Table 4).

Graduates also cite a range of experiences and activities at DLMHS that they rank as very helpful in preparing them for college-level work (see Table 5, page 10). These include relationships they fostered, particular courses they took, and collaborative experiences they had in class.

Table 4: Academic Preparation for College Work

Areas of academic preparation	Percent very prepared
Writing clearly and effectively	63%
Speaking clearly and effectively	63%
Thinking critically and analytically	65%
Speaking or presenting in public	65%
Working effectively with others	76%

Source: Graduate Survey

Table 5: Dozier-Libbey Experiences Supporting College Success

Experiences	Percent somewhat or (very helpful)
Relationships with teachers/advisors	91% (57%)
English (or Humanities) courses	96% (63%)
Science courses	87% (53%)
Working with other students on projects	96% (60%)
Explaining my thinking	87% (50%)
Thinking about how I learn best	87% (57%)
Testing or trying out my ideas to see if they worked	91% (57%)
Choosing my own topics for projects, presentations, and assignments	89% (67%)
Using my out-of-class experiences in class	89% (61%)
Pursuing topics that interested me	89% (67%)

Source: Graduate Survey

DLMHS's strong student outcomes reflect the relevant, hands-on, and interactive style of teaching that engages students and the strong commitment that the staff makes to support all students both in and out of the classroom. The 4-year-long focus on college, coupled with offering the courses, known as “a-g” courses, required for admission into the UC and CSU systems, and providing the students with the supports needed to apply and succeed in college make it a reality for many more students than would otherwise be likely to attend college. Finally, the culture of group work, seeking help from teachers, and the foundation of strong academic skills enable DLMHS students to thrive in college.



Personalization

There's something about the teachers, there's this essence about them that they care. They're not the teachers that come to get paid or to say, "I'm the teacher." They're the teachers that come to make a difference in a student's life, and that's what we see from all the teachers at Dozier. —11th grade student

Key to DLMHS's student-centered approach is the belief that students' academic success depends upon students feeling connected to their school community and supported to do their best work. Encouraged and supported by the principal, the staff facilitates this sense of connection by treating students with respect and in a holistic manner, not just as receivers of knowledge. The staff knows that this means that students need different types of supports and relationships with their teachers. Both individually and collectively, teachers work to know their students well so that they can offer support to open the doors to learning. When students feel safe and cared for they can take risks in the classroom to reveal what they do not yet know and ask for help both from their teachers and from each other.

We Are on Your Side: Teachers Caring for Students

DLMHS is a place where students report feeling cared for by their teachers who look after their academic, social, and emotional well-being. The staff takes seriously their school vision that states, "Every student valued." Students feel valued and well known by school staff and turn to them when they have a personal problem. Students connect to their teachers early on during their time at DLMHS, as several ninth graders reported experiencing teachers making a personal connection with them. One ninth grade girl explained, "Certain teachers like to take the extra step to get to know you and I can say five out of my seven teachers actually know me personally." Another ninth grader added that she felt cared for when she asked to speak with her teacher about a personal problem. A 10th grade student shared a story of a friend who was struggling in his relationships with other students. His friend relayed, "Out of all the people they could have told, they told a teacher and the teacher helped them through it, gave them advice, and then that advice worked and that problem was resolved." Student survey results reinforce these student experiences (see Table 6, page 12).

Another way DLMHS facilitates relationship building is to focus on students' experiences through the curriculum. For example, ninth grade health class students participated in an activity in which they step over a line on the floor if they had experienced a particular issue related to their race or ethnicity. Students recalled that these types of activities helped them get to know their peers and build connections with one another. A student explains, "It gives you more one-on-one contact with your peers. You learn a lot more about people." Students reported feeling safe, knowing that all they shared would be kept confidential.

Table 6: Teachers Care About Students

I agree that in my school this year, there is at least one teacher who:	DLMHS	Comparison schools
Would be willing to help me with a personal problem	83%	59%
Really cares about how I am doing in school	88%	63%
Knows who my friends are	85%	58%

Source: Student Survey Data³

DLMHS's first graduating class so values the relationships it formed with teachers that many of the students report staying in touch with their teachers. One student who is attending a local community college still asks for help from her high school teachers.

Enabling Teachers to Provide Support

Just as students need to be valued, so do teachers' efforts to know their students well. At DLMHS both formal and informal practices reinforce these values. The school leadership understands that it takes time and effort to get to know students well enough to understand how their lives outside of school may be impacting their experiences in school.

To the principal, valuing students means setting aside the first few days of school for team-building activities, so teachers and students can get to know each other better. Many teachers also engage in their own strategies to get to know their students well. For example, 92% of teachers reported meeting with students to help them reflect on their progress and provide support. As one teacher explained:

We just say, "We're worried about you. What can we do to make it work? How can we get you to do better?" So I think, just being able to have conversations with each other and with the student. The student knows that they're all there for them, that we're watching them. We're trying to make something better. Sometimes they like that, sometimes they don't. But, I think that's really beneficial for all of us.

One teacher provides levity in her classroom because she's learned that many of her students have a deceased parent and humor at school can provide an "important release for them." A 12th grade English teacher finds that the process of having her students write their college personal statements at the beginning of the year reveals much to her about her students' lives. She draws on what she learns to provide accommodations for her students. For example, one year she had a student with Tourette's syndrome and a very hard life. She describes the situation:

³ Student Survey Data includes 201 students, 32% of students. Comparison data is taken from The Study of Deeper Learning Opportunities and Outcomes funded by the William and Flora Hewlett Foundation and conducted by the American Institutes for Research that included several of the schools in this study. The student comparison sample with a total of 1392 students comes from 10 schools across the country.

He basically went into foster care because he was a drug mule between his parents and his parents' clients and he was sleeping in a car for a year and a half. I mean just unbelievable. So we developed a little [system] where he would look at me and he'd [give a hand gesture when] he needed time outside to just make whatever go away.

She goes on to explain that although she starts the year by setting high behavioral standards, after she reads the essays she realizes that making individual accommodations can be beneficial to particular students. Providing students with that level of respect means that they do not take advantage of the situation. "They're not asking for the moon, and they never would," she says. This particular student's life trajectory was likely transformed by the care he received from his teachers. He shares:

I developed Tourette's in 10th grade. I blank a lot, can't focus on the lesson. Teachers have really helped me out. I let them in and they helped me out. I was gone 3 weeks a bunch of times so I got really behind. I never thought I would catch up but my teachers helped me out and now I am going to graduate.

As the example illustrates, knowing about and accommodating the challenges in students' lives can make the difference between students' success and failure.

Beyond using in-class activities to get to know their students, teachers take advantage of structured and informal teacher collaboration opportunities to share strategies that are effective with particular students. For example, a health teacher describes her lunch conversation with her colleagues:

"Hey, so-and-so's not doing good What works for other teachers? Because I know he is getting a better grade in your class." We can have discussions that are informal and pick each other's brains to find out what works for the student.

Teacher survey results reinforce the previous examples of teacher commitment to meet all their students' learning needs (see Table 7, page 14).

Although teachers initiate much of the relationship-building with students, student initiative is also valued and reinforced. This is exemplified by the strong relationship the students have with the school security guard whom many seek out when they are too upset to go to class. "Everyone trusts her and she's like more like a friend and just someone who just has a job being paid busting you if you get in trouble," a ninth grader reports. Students are not expected to be able to block out personal challenges and maintain a laser-like focus on learning. The staff recognizes that personal challenges need to be addressed so that students can learn. Unfortunately, the school lacks all the resources it needs to adequately support students, so much of the burden falls to teachers. This will be discussed in the section on student support.

Table 7: Teacher Commitment to Students’ Learning Needs

Teachers in my school:	DLMHS	Comparison schools
Feel responsible that all students learn	96%	80%
Try to make progress with even the most difficult and unmotivated students	96%	75%
Identify challenging yet achievable goals for each student	92%	62%

Source: *Teacher Survey* ⁴

Feeling Connected: Students Have a Sense of Belonging

Despite some challenges to meet students’ needs, the outcome of the staff’s commitment to their students is a close community where students feel respected, valued, and loved. A parent illustrated this sentiment, “My son says, ‘It’s like a family, Mom.’ He just loves it.” A 10th grader with a similar experience said, “Our relationships with each other and relationships with peers, our relationships with the staff in the office, with the staff in the career center, the teachers. I think that we are all connected with a really big bond.” The culture of respect and caring that students feel from the school staff makes its way into the general culture of the school, imbuing the students with a sense of belonging and connectedness to each other. Students report cross-ethnic group friendships and a tight-knit culture where students “come together.” This sense of caring gives many students a feeling that the school is small, even though at 650 students it is larger than many small schools. A ninth grade girl compares DLMHS to a nearby high school. “There are fights constantly and there is a lot of drama. This school is so small that you have no other choice to know everybody and if you know everybody, there is not really a lot of drama.” Student survey data reinforces students feeling valued and cared for at school (see Table 8).

Positive relationships between students and the academic culture translate into students supporting each other academically as well. As one 11th grade girl explains, “I feel like students that know what they’re talking about will offer and help you because we’re so close.”

Table 8: Students’ Sense of Belonging at School

What do you think about your high school?	DLMHS	Comparison schools
People at this school are friendly to me	94%	61%
People here notice when I am good at something	80%	57%
I feel like a real part of my school	72%	48%

Source: *Student Survey*

⁴ Teacher Survey is of 25 teachers, 93%. Comparison data is taken from The Study of Deeper Learning Opportunities and Outcomes funded by the William and Flora Hewlett Foundation and conducted by the American Institutes for Research that included several of the schools in this study. The teacher comparison sample with a total of 356 teachers includes results from 12 schools across the country.

The culture of caring and mutual responsibility supports the students and helps them feel respected as equals and as responsible and capable people. Eighty-eight percent of students report feeling that their teachers respect them, compared to 62% of students in comparison schools. A ninth grader explains, “They don’t look at us as ‘oh you guys are teenagers, we’re the adults.’ Like, boss, boss, boss, boss us around. They [say] ‘We’re here to help you.’” Another adds, “Like eye to eye, just like they don’t have to look down on us.”

Treating students as capable is another hallmark of the student-centered approach at DLMHS and results in students with a high sense of self-efficacy (see Table 9).

Table 9: Student Self-Efficacy

The following statements are usually true for me:	DLMHS	Comparison schools
Even when things are tough I can perform quite well	72%	49%
I believe I will be able to overcome challenges	82%	57%
I believe I will be able to reach my goals	82%	59%

Source: Student Survey

Self-efficacy enables students to persist through challenges and increases their likelihood of experiencing academic success. It provides students with an emotional strength to keep daily challenges from derailing their long-term goals. A recent graduate credits his teachers with reinforcing the values of persistence when they would tell him, “Work hard. If something goes wrong, don’t be discouraged. Keep doing your work.” These values paid off for him in college when he was able to persist through some early academic struggles.

Guided by Student Voice

The respect that the school staff shows toward students extends as far as turning to students for direction in how to improve the school. As a relatively new school with a self-reflective culture, the staff is in a mode of continuous improvement and students’ voices are an essential component of that growth.

In preparation for their Western Association of Schools and Colleges (WASC) accreditation during the 2011-2012 school year, DLMHS brought a focus group of students to the professional development session. Using a fishbowl format, teachers listened to students’ suggestions on areas for school improvement. From the conversation, they learned that the school needed to address problems with its advisory program, how it supported incoming ninth graders, and communication among grade level teachers. What is remarkable about this event is not that the staff listened to students but they made these areas their focal points of their work for the following year. The staff divided themselves into three committees to address the concerns. Principal Castro lauded the process saying, “It was so powerful.” She added that plan to continue to invite students to professional development and grade-level meetings.

Listening to Student Concerns

Three 11th grade students entered the classroom, awaiting them was the entire 11th and 12th grade teaching team who had met earlier to brainstorm what to ask the students. The 11th grade teachers invited the 12th grade teachers to diffuse their own potential defensiveness. The 11th grade teachers also invited a 12th grade student to offer another perspective. Over the course of an hour, the teachers listened seriously to the students' concerns and collectively developed action steps to remedy the situation. It emerged from the conversation that students felt they had major assignments due at the same time, struggled with time management, and were afraid to speak with their teachers. The first thing the teachers checked is that they had not assigned multiple major assignments to be due at the same time. The teachers reassured students that they wanted to support them. One asked, "How can we work together so students are not afraid to talk to teachers?" Another commented, "We do a lot of grading and we'd much rather spend our time grading good work than crap. It won't get better if you don't talk to us." Following this discussion the teachers and students came up with these action steps.

- 1.** Teachers would provide time management tips in Advisory.
- 2.** Teachers would work to convey to students that they are a team and that students can talk to any of their teachers about their work in any of their classes.
- 3.** Teachers would bring graduates back to school to talk to 11th and 12th graders about college and what they needed to do to be successful.

In addition to soliciting student voice to shape the school improvement foci, the staff also responds supportively when students take initiative to voice their opinions. In many schools, student complaints would be viewed as threatening and shut down, but at DLMHS, the staff do all they can to interrogate student concerns and address them fully. This approach further enhances students' sense of self-efficacy and indicates to students in an authentic way the extent to which their voices are valued. For example, when a group of 11th graders emailed their teachers with concerns about their workload and stress levels, their teachers invited them to join the entire 11th and 12th grade team for an after-school conversation. The sidebar, "Listening to Student Concerns" on page 16, describes this session in greater detail.

In another instance, the members of the first graduating class of seniors told their teachers that there were things they wished they had known in their first three years at DLMHS. The staff responded by inviting the entire senior class to speak on panels to their peers during the career awareness day. Every student in the school had an opportunity to engage in a conversation with a panel of seniors. The panels were not handpicked to include only the most articulate or the high achieving students; all voices were valued. The senior panels began by soliciting questions from the 9th, 10th, and 11th graders. Student questions and responses were offered on a range of topics including: applying to and financing college, the best courses to take at DLMHS and during summer school, how to be successful in school, and how to ask for help and manage challenging home situations. The seniors responded with advice that emphasized building on existing strengths and working together. For example, a senior shared that it was helpful to know how she learned: "For physiology lab I know I am a visual learner so I labeled my little brother." A Latino senior said that for his Spanish class he labeled his house with sticky notes naming items in Spanish. Another senior concluded the panel by reminding the students to take advantage of the support that they have: "You may think you are all alone and no one is on your side. Lots of people are on your side. Be friends with each other; you will need each other."

While the principal could have responded to the graduating seniors' comments by having teachers address the information the seniors wished they had received, she chose to let the students themselves collectively address this gap so it remained student to student. This is a truly student-centered approach.

Reaching out to Parents

To increase student commitment to school and the likelihood of academic success, DLMHS strives to build parents' connection to the school as well. This is particularly challenging in this community where most parents commute, about 30% of students parents do not have more than a high school education, and the school does not have any sports teams—often a natural way for parents to be connected. Despite these challenges, teachers reach out to parents informally. One parent reports that her son's teachers "all had really good feedback about him and how he's just excelling and a leader."

In response to these circumstances, the staff at DLMHS reaches out to parents virtually through an online portal that offers parents access to direct communication with their children's teachers and information about assignments and grades. Parents are also invited to chaperone college visit field trips and attend student presentations. A few parents are actively involved in the PTSA, but most of the membership, about 20% of parents, are more passive members. However, the principal brings ideas to the PTSA to get feedback, even though it functions primarily as a fundraising body. The PTSA supports open house, back-to-school night, school dances, and school activities. They also solicited a large donation of scrubs that they sell to the students.



Academic Program

DLMHS exists to challenge students with exciting, rigorous instruction that prepares them with the knowledge and experience to succeed in health science professions and college.

—Mission Statement

DLMHS's academic approach is tightly linked to its mission statement. In presenting its academic model, this case focuses on student-centered aspects of the approach that appear to be making a difference for students. In particular, student-centered practices at DLMHS include:

- high expectations and a focus on college preparation;
- integration of a health care career focus into all aspects of the curriculum;
- preparation for working in the health care field;
- interdisciplinary project-based instruction;
- focus on mastery; and
- academic supports for English language learners, special education students, and struggling students.

Preparing Everyone for College

Knowing how college is and knowing applications, I feel like if you don't have that at home you have it here. Anyone you want to talk to knows about that. If you want to come here to the career center you could talk to somebody about that, or the lady in the office. Everyone will help you with that.

—12th grader

DLMHS's focus on preparing all students for college is particularly important since at least half of students' parents did not have the opportunity to complete their college education.⁵ As much as their parents may want their children to have access to acquiring a Bachelor's degree, they may lack the information to ensure that their children have met the eligibility requirements. They may also not know if the school experiences their children have will adequately prepare their students to have the academic and life skills to persist through college.

Central to DLMHS's focus on preparing students for college is ensuring that all students graduate having completed the a-g courses necessary to attend the UC or CSU systems.

⁵ On the student survey, students report that 37% of their mothers and 39% of their fathers did not attend college. An additional 13% of mothers and 10% of fathers only completed their Associate's degree and about 18% of students did not know their parents' education levels.

DLMHS graduation requirements actually exceed the a-g requirements by including more advanced math and two additional years of science. They far exceed the district graduation requirements. Appendix B indicates how these course requirements play out over students' 4 years at DLMHS and compares a-g, DLMHS, and district requirements.

The college-going expectation is clearly communicated to parents and students who understand the specifics of what that means. As one parent explains, DLMHS staff “expect for them to complete their high school career with a-g requirements met and to be college ready.” Students recognize that DLMHS's college focus is unique in their district. According to a 10th grader, “The other schools are not as challenging as we are and they're not as focused on college preparation.” A recent graduate reinforces this experience, noting that while at DLMHS she enrolled in community college courses that were “10 times easier than high school classes.”

Although parents and students alike are clear on DLMHS's commitment to prepare all their students for college, as a district school DLMHS cannot withhold a diploma from students who graduate without meeting these requirements. The district policy is that all students in all district schools have the same graduation requirements. DLMHS has circumnavigated this challenge by issuing a second graduation certificate to its students that do meet the school graduation requirements called The Certificate of Excellence. Fortunately, DLMHS has been successful in supporting students to strive for a-g completion. Ninety-six percent of the first graduating class of 2012 met the requirements. Principal Castro notes that the district graduation requirements do not match the a-g requirements. District-wide a-g completion is 25%. Just providing students with access to rigorous classes is not sufficient, however, as many will need support to succeed in those classes. A later section in this case describes the kinds of supports that DLMHS offers to its students.

In addition to ensuring that students take the courses that make them eligible for college, DLMHS strives to make college tangible for students and to help them see themselves as college worthy. Principal Castro explains, “I think so many kids don't realize that they could go to college when they come in as freshmen. . . . Those are the ones who you really want to get. Those are the ones contributing to the achievement gap.”

As part of its commitment to helping students see themselves as college bound, the school brings all students on college visits at least once a year during their 4 years at DLMHS. The part-time college coordinator arranges college visits based on the colleges that students express interest in visiting in a student survey. Past trips have included UC Berkeley; UC Davis; San Francisco State; California State University, East Bay; several local private colleges; and several trips to Stanford University. Students love the field trips and feel that that they help them know what size and kind of college they want to attend. One 11th grader explained, “You could feel like what you want, you'll look and you'll see, ‘Do I want to be this crowded? Do I want a smaller school?’”

The DLMHS staff also provide specific supports to students to prepare them for college and help them complete the college application process. The school counselor conducts regular transcript reviews for every student and meets with any student who is not on track to graduate and complete a-g requirements. She also distributes a newsletter to students and parents with grade-level specific information about what students should be doing to prepare for college, like signing up for the PSAT exam. DLMHS has a college and career center.

The 12th grade English teacher also contributes substantively to preparing students for college. She also holds information nights on completing the financial aid form, getting scholarships, soliciting teacher recommendations, and actually completing the online application. She dedicates a week of instruction to supporting students in completing their applications. She discusses extracurricular activities and financing college, and reviews their transcripts. She adds, “We talk about gaps in the application and how to answer the questions.” She spend three weeks with her students supporting their writing of their college essays, which includes completing at least two drafts that she views as aligned with the state standards, since it is narrative writing. The teacher also offers to review her students’ essays as many times as they would like. Some ask for help over and over again and, she says, “I’ll just keep doing it.” Students value this support. As one student said, “Whenever you needed help with the essays [teachers] were there to help you, find 5 minutes and she would read your essay for you, make corrections and you can come back whenever. It’s really helpful.”

In addition to the class work, the teacher estimates that she meets individually with about 40 to 50 students and shares college books that she keeps in her room that students can check out.

One new teacher caught a half dozen kids who were not planning on applying and convinced them to apply to college. The teacher insisted that these kids come to her advisory and she said to them, “You are on free and reduced waivers. Let us get you at least applying to four schools because it’s free. Let’s just do CSUs. You don’t even need an essay because you already wrote it.”

The student survey data reveals that students feel well prepared for the college application process (Table 10).

Table 10: Supporting the College Application Process

My school has been helpful or very helpful in helping me:	DLMHS	Comparison schools
Understand the admissions requirements for different colleges	78%	47%
Evaluate my readiness for college-level coursework	83%	46%
Develop the kinds of study skills I will need in college or vocational/ technical school	81%	46%
Learn about or practice for college entrance or placement exams	76%	47%

Source: Student Survey

Teacher survey data as well reinforces the college prep focus. Seventy-six percent of teachers report talking to students frequently about what they need to do to graduate from high school and the remaining teachers have these conversations sometimes. Seventy-six percent of teachers report talking to students sometimes or frequently about choosing college.

Focusing on College Facilitates a Culture of High Expectations

This school is really nice compared to others and it motivates me and gets me better into my education. And then especially the people surrounding me they also want the same goal so it's really nice.

—*Ninth grader*

As a school that is explicitly preparing students for college, teachers, parents, and students acknowledge that students are expected to perform at high levels. Teacher survey data indicates that teachers not only think that their principal sets the expectation that students will perform at high levels, but also that they believe their colleagues realize these standards as well (see Table 11).

DLMHS takes concrete steps to prepare its students for college by engaging students in rigorous coursework. For example, DLMHS has made the decision to open Advanced Placement (AP) courses to all students, who can self-select in these classes.

Teachers work hard to support students who do choose to enroll in AP classes. For example, in the AP social studies class, the teacher provides scaffolding for students, particularly in first semester. They must complete a study guide and a self-assessment for each unit. They have to complete the self-assessment to the teacher's standards before they can take the chapter test.

In the 2012-13 school year, 143 students took 217 AP exams, which represent about 51% of 11th and 12th graders. By comparison, in California in the same year 37% of

Table 11: High Standards for Students

Teacher survey questions: Teachers agree (strongly agree) that...	DLMHS	Comparison schools
The school sets high standards for academic performance	100% (72%)	75% (17%)
The principal sets high standards for student learning	96% (72%)	85% (26%)
The principal makes clear to the staff expectations for meeting instructional goals	96% (72%)	79% (24%)
Other teachers in the school set high expectations for academic work	96% (60%)	80% (16%)

Source: *Teacher Survey*

California students and 32% of U.S. students took at least one AP exam.⁶ The scores on 45% of exams was a 3 or better. However, one teacher urges students not to worry about the AP exam, and know that even if they do not do well on the exam they will still enter college more confident and familiar with the material.

However, whether in Honors/AP courses or college prep courses, the school has made a commitment to support each and every student striving beyond what they think they can achieve. For example, in English, college prep students complete basically the same coursework as Honors students except they have a slightly reduced writing and reading load and are given more time on timed exams but still engage in thoughtful and rigorous work. No matter which classes they are enrolled in, students are aware of the high expectations. For example, 89% of surveyed students say that their teacher pushes them to become a better thinker in two or more of their classes, and 60% of students feel this way in three or more of their classes. A 10th grade student explains, “We don’t get simple projects you could do in 30 minutes before school. You’re going to have to take time on your work. You have to put effort into it.” A 12th grader adds, “They want us to all be erudite students. They don’t want us to make the minimum and go on.”

Students describe much of the rigor coming from teachers’ expectations of them. One 11th grade girl explains:

They want us to go above and beyond what we think we can do. They do push us to [even if] we don’t think we’ll go that far. Sometimes you feel irritated because you think that they’re telling you what to do, but it’s just to help you and make you do your best.

The student survey data reinforces this student’s point: 80% report that their teachers do not let them give up when the work gets hard in at least two classes and 52% feel that way in three or more classes. A recent graduate, enrolled as a freshman at University of California, Santa Cruz, and first in her family to attend college, remarks on the extent that high expectations prepared her for college. “My English class in my senior year was extremely helpful. I really got the sense of what an English college paper would feel like. The teacher graded strictly: my A paper was a D paper.” From this experience the student learned how to turn her D paper into a college-level paper. Students comment that DLMHS is so rigorous that even PE has academic work in which the students have to take quizzes, write journal entries, and take a final.

Parents appreciate the high expectations and believe the school is able to motivate and transform the life trajectory for students. One parent exclaimed, “They expect them to succeed. I believe that when you raise the bar a lot of the kids go way above that.” The parents contrasted the expectations at DLMHS with other area schools that they described as “complacent” with “barely passing” students.

⁶ Source: <http://media.collegeboard.com/digitalServices/pdf/ap/rtn/9th-annual/9th-annual-ap-report-single-page.pdf>

Another component of holding students to high academic standards is having them reflect on their learning over their 4 years at DLMHS. In 2013, DLMHS instituted a portfolio defense their senior year in the disciplines of English, science, social science, health, career, and an additional discipline of their choosing (math, a foreign language, ROP, art, or band). Students are assessed using the school Vitals (DLMHS's version of ESLRS; see Appendix C for the school Vitals as well as the Senior Defense project).

Despite their efforts to hold students to high standards, teachers recognize there is more they can do to support students' success. They have identified writing skills as areas for instructional improvement. In response, the English department put together a writing resource book that every student gets. Among other topics, it includes brief overviews on the components of five-paragraph essays; how to write strong thesis sentences, introductions, body paragraphs, and conclusions; as well as MLA guidelines and model essays for 10th-12th grades.

Curriculum Focused on Health Care in a Diverse World

Whether they want a career in health care or not, they're all going to be consumers of health care. We're teaching them how to navigate the health care system. We're teaching them how to be ethical and responsible employees whether they go into health care or not. For me, it's really just supporting their goals to graduate high school, and to enter some type of post-secondary education or training, and then ultimately to getting a career they really love.

—Teacher

The signature distinction of DLMHS's curriculum is its comprehensive integration of a health careers focus throughout students' coursework. Students learn about health care content both in classes devoted solely to this subject as well as integrated through interdisciplinary, project-based coursework in their core academic classes. Although not all students will pursue a health care career, the staff feel that knowledge of health and the health care system is beneficial to all students. According to one teacher, "When you go to the doctor's office and they use this big word it's going to help you personally."

The health care focus is student-centered in that it brings relevance to the curriculum. Students can see not only how their education could prepare them for a good career, but also that the world is interdisciplinary in its very nature. It helps them understand how English, social studies, or science play out in real-world ways. Furthermore, DLMHS teachers layer a focus on cultural diversity into their instruction so students can see themselves in their health-infused study as well. As one teacher explains, "What the school is about is trying to find ways to incorporate student interest with the thought being that if a student is interested, that they're going to learn other things better because of that interest."

The focus also brings coherence to the curriculum, allowing students to see the interrelationships of their school subjects. Finally, the curriculum enables students to gain not

only content knowledge but also life skills that help them persist through college and find career success.

It's all related to health care

Every grade has a year-long, health-care-related theme and the students engage in at least one interdisciplinary project during the year that brings together work across their classes. This is both a curricular and pedagogical focus as teachers teach these interdisciplinary units with a project-based approach that engages students in a highly relevant and generative topic. Each theme has a focus that core content teachers can address through their various disciplines and provide opportunities for deep student exploration. The sidebar on pages 26-27 provides a highlight of the theme for each grade level.

The principal explains how this approach makes learning more relevant and accessible to students while still hitting the core content area standards:

You know when they're reading a book in English; it's not just a random book. It's *Chew on This* in ninth grade and they're learning about fast food and its effects on their body, which relates to what they're learning in health class about nutrition and the rat experiment that they're doing in the biology class. . . . They kind of don't realize they're doing the English standards because they're thinking about fast food and the nutrition, but they're reading text for meaning and all of the standards that you're supposed to do in English. So really, the most important thing that we do is teach them to access, interpret and apply information.

Not only is a health focus integrated into the core curriculum, but also it serves to unify interdisciplinary projects across core content areas. Even ninth and 10th graders recognize the interconnected nature of their classes. One 10th grader says, "All our classes are connected." The vast majority of teachers are involved in integration as 92% of teachers report developing thematic units or other approaches to integrating instruction across curricular areas sometimes or frequently, with 60% reporting to engage in this type of instruction frequently (compared to 61% of teachers in comparison schools sometimes or frequently and only 18% frequently integrating instruction).

Initially, the 12th grade teachers were able to take interdisciplinary instruction to a deeper level than teachers in the other grades because they participated in an initiative on performance-based assessment and were given extra planning time. The 12th grade team met over the summer. Subsequently, the other grade-level teams are working to enhance and expand their existing integrated curriculum, using what the senior team developed as a model.

The 12th grade team tightly linked their unit to the ideas of "able-ism, trans-humanism, and what it means to be fixed," according to one teacher. Into this unit they also integrated the film *Fixed*, which explores the burgeoning field of "human enhancement"

9th Grade: Good Eats

Focus area: Nutrition and fitness.

English: *Chew on This*, a behind the scenes examination of the fast food industry.

PE: Students set personal fitness goals, journal what they eat, and measure their performance in relation to what they eat over time.

Health: Students learn about nutrition, how to make menus, and how to analyze the content of their food.

Biology: Students conduct experiments on the impact of nutrition on two baby rats: one who is fed regular rat food, the other gets junk food (Gatorade and cookies). They measure growth over a period of time. The students record their data and write a paper on their findings. Although many students hypothesize that the junk food rat will get fat, it becomes undernourished. The students learn about failure to thrive and other pediatric nutrition issues. Students then bring the malnourished rat back to health and adopt the rats.

Culminating project: In groups, students select a topic related to nutrition or fitness and create pamphlets to build awareness of the issue (e.g., heart disease, diabetes, osteoporosis, fad diets). Students dress up for an evening science fair exposition for parents and present their project on a tri-fold poster board.

10th Grade: Second Opinion

A Focus on Complementary and Alternative Medicine

Focus area: Physical, mental, and spiritual health and comparing traditional western medicine to alternative and eastern medicine. They learn about cultural competency in medicine as well.

English: *The Spirit Catches You and You Fall Down* about a Hmong family with an epileptic child in a nearby community.

PE: Students learn about movement in different cultures, including Sumo wrestling, Indian dancing, and Yoga and teach each other a dance from another culture.

Spanish: Students examine Spanish cultural approaches to medicine.

Health: Students study physical, mental, and spiritual health as well as issues of cultural competency in health care.

Culminating project: Students in groups of three draw from 20 case studies that the health teacher developed of different diseases or conditions. The students compare western approaches to alternative and eastern approaches to treatment.⁷ Students present their projects to parents and community members as a debate, a Public Service Announcement, PowerPoint, or a paper.

⁷ This curriculum was designed by the health teacher as part of a collaboration with the Office of the Surgeon General. She is the first teacher in the country to pilot this curriculum.

11th Grade: Life Cycle

Focus area: Salient medical issues at each stage of life. The students study the life-cycle backward, beginning with end of life.

English: *Stiff*, about human cadavers and all the things the human body can be used for after death, like dissection by medical students, or use as crash test dummies.

Physiology: Study of the reproductive systems, pregnancy, and birth

Health: Students study health issues at each stage of life, from hospice at end of life to pregnancy and parenting at the beginning of life. In a series of units on pregnancy and babies, students take turns wearing pregnancy simulation bellies and manage tasks like jumping jacks, talking to a teacher who asks questions about their pregnancy, lying down, folding laundry, and sitting in the teacher's car. This unit is detailed in the opening description of this case. Students are assigned their own electronic baby in a real car seat and have to care for the baby at all hours of the day and night when it cries.

12th Grade: Medical Ethics

Focus area: Analysis of ethical issues in medicine.

English: *The Immortal Life of Henrietta Lacks* about an African American woman whose body was used to harvest stem cells without her family's consent. Her stem cells are the most widely used in the world.

Physics: Students develop, design, and build a device for somebody who is disabled. Students identify the device as something that would enable them to still do something they, personally, are passionate about if they lost the ability to do that activity.

Medical ethics: Students learn about the Eugenics movement and medical experimentation. Related to their physics project they examine who the stakeholders are regarding the device, whom it is benefitting, whom it is harming, and what it will cost to make.

Culminating project: The goal is to deeply investigate the meaning of disability and the biases in the notions of "fixing" a disability. Students write a paper on what they knew, did, and reflected about in relation to their physics project. Research for the paper is conducted in English, outlined and drafted in medical ethics, and graded for content by the Medical Ethics teacher and for organization and mechanics by the English teacher. The rubric for this activity is attached in Appendix D.

technologies (i.e., bionic limbs, brain machine interfaces, and prenatal screening technologies) from the perspective of individuals with disabilities. *Fixed* uses the current debates surrounding human enhancement technologies to tackle larger questions about disability, inequality, and citizenship. As the teachers struggled to understand the unintended negative consequences of helping people with disabilities, they thought their students might struggle too and so they sought to make their own learning transparent. “It would be cool if we could bottle how we broke this down,” explained a teacher. The English, social studies, medical ethics, and physics teachers watched the film with students and shared their reactions in a fishbowl format for the students to observe. They also provided the students with quotes from the film to facilitate a class discussion.

The collaboration among teachers facilitates teachers helping students make connections across the curriculum. A science teacher talks about saying to his students:

Remember when we talked about this? What did we say about this two units ago?’ Trying to make those connections across the units. Or even across disciplines. So we are talking about this here but you learned about it in health, or in English you read this book.

A 12th grade teacher describes a benefit of their interdisciplinary approach: Students experience related ideas in physics, medical ethics, and English, and all teachers are using common grading rubrics. She explains, students are “talking about the same subject the entire day coming at it through three different lenses. How cool is that?” And “students are starting to see that it’s working smarter and not working harder and it just is more meaningful to them.”

Of course this approach has trade-offs as well. Infusing a health focus into English, for example, means that not all the general literature books that teachers may want to teach can be included. For example, the 12th grade English teacher describes having to give up *Beowulf*, *Canterbury Tales*, and *King Arthur’s Legends*. “It hurt a bit (sigh),” but she was able to exchange those books for other exciting books like *The Immortal Life of Henrietta Lacks*, which, according to the teacher, the kids loved and enabled her to teach in collaboration with medical ethics and provide students with compelling non-fiction reading, a key component of the Common Core.

The math department is struggling to connect to the interdisciplinary focus. They are required by the district to adhere to a more rigid pacing guide and curriculum than the other disciplines. There are also few models and examples of math integration into interdisciplinary curriculum for the teachers to draw from.

Preparing for a health care career

DLMHS takes seriously its commitment to prepare students for careers in the health care field as shown through school-wide and grade level activities as well as specific course offerings, shadowing and internship opportunities, and membership in Health Occupations Students of America (HOSA), a national student organization.

For many students, the focus on health care careers can provide a pathway out of poverty and into a career that pays a living wage. It opens a door for students to think that work can be something they are passionate about. Many students' deep interest in a health care career also provides them the motivation to work hard and persist through personal and academic challenges. The pathway focus also makes learning relevant and applied for all students. Table 12 indicates some of the ways DLMHS is preparing students for careers.

Table 12: Preparing Students for Careers

Students who think their school has been helpful in:	DLMHS	Comparison schools
Assessing their career interests and abilities	64%	41%
Providing information about occupations (e.g., salaries, working conditions)	68%	37%
Teaching job skills (how to find a job, write a resume, and interview for a job)	76%	34%

Source: Student Survey

The most visible way that DLMHS prepares students for health care careers is through the school uniform: medical scrubs. Students are required to wear scrubs every day, but they can choose their own and display their style through the scrubs they select. Although the students do not all love wearing them, it does help them see themselves and their peers as capable of having careers in medicine. One 10th grader laughed, and said, "All I got for Christmas last year was 13 pairs of scrubs and a calculator."

Career information and skill development

DLMHS provides school-wide and grade-specific opportunities to learn about the range of careers within the health care field and develop career related skills. The primary school-wide activity occurs every other year, on C3 day, which stands for Career, College, and Community. On this day the regular school schedule is suspended and students listen to presentations from a range of about 100 speakers who include current college students, college representatives, doctors and nurses, radiologists, EMTs, medical records processors, chiropractors, and social workers among others. As students listen to the presenters they fill in a template with information about each presenter's organization, job, daily schedule, education background, income, and career choice. Then the students are asked to reflect on what they just learned about the career and whether that career would be of interest to them. C3 day also includes a college and career fair with 50 representatives from various colleges, universities, health organizations, and even visits from a medical helicopter (which lands on the school field) and an EMT ambulance. Students can look inside the ambulance and helicopter and ask the EMTs questions.

This event in and of itself functions to tie together all of the research, exhibitions, cross curricular projects, and college exposure in such a way that students can see how their DLMHS education connects to preparation for college and career. This day helps make the intangible tangible.

Engaging in a study of health

In addition to traditional high school coursework, DLMHS students take 3 years of health science class in ninth through 11th grade and then medical ethics in 12th grade, which counts as a social studies elective course. The health science courses have a curricular focus that influences and mirrors the interdisciplinary units described previously. They also serve as the best space to provide students with career skills and information.

In Health Science 9, the curriculum includes physical fitness, nutrition, and the district-required topics of sex, STDs, alcohol, and drugs. In addition, in ninth grade students begin contributing to an electronic portfolio that will by the end of 11th grade include a resume, cover letter, letters of recommendation, samples of their academic work, work skill certification, and awards. Students also begin to gain exposure to career information by selecting 10 of 40-50 guest speaker presentations to attend through the year. According to a health teacher:

I think that gets them to start thinking about all the careers that are out there. They get to listen to people explain how they got there, sometimes it's a very straight path, and sometimes there are all kinds of stops along the way. It's just interesting for kids to see that.

The students conduct their own research on different health care career options as well.

A highlight of the year is when they visit the operating room (OR) in the Kaiser medical facility adjacent to their campus. Kaiser OR staff set up a dummy with a make-believe stomach filled with Skittles and other candy. Students, suited up in “bunny suits” take turns using the laparoscopic equipment to retrieve the candy. Next, the students visit the Medical Imaging department and see the different imaging modalities such as CT, MRI, and ultrasound. In both departments the students learn from the hospital staff about career options in those fields.

In Health Science 10, the curriculum includes cultural competency and learning about complementary and alternative medicine. In addition, human resource professionals work with students to help them write resumes and conduct mock interviews. Every student conducts a 10-minute interview with a human resources health professional. Students also participate in a 2-week e-mentorship project. Great efforts are made to pair students with a professional in an area of interest. They are assigned one health care professional and have a structured email dialogue to ask questions about the career, the best and worst aspects of the job, an overview of a typical day, and what preparation was needed to work in the career. In the 10th grade, students learn to do hands-on medical skills as well, such as taking vitals, and how to apply them in different scenarios. Tenth graders travel to another local medical facility and listen to four to five brief presentations by guest speakers from departments including Geriatric Care, Labor and Delivery, the OR, Nutrition Services, and Neurology Trauma. The students split up into groups of no more than eight per group and are given a tour of one department, including the hyperbaric chamber, pharmacy, pediatrics, pediatric oncology, Emergency De-

partment, and Clinical Laboratory. On the tours they learn more about the careers in that department and the services they provide.

In Health Science 11, the curriculum includes life cycle issues from death to birth. The students also complete curriculum and assessments on work-ready skills and National Health Standards.⁸ Although it has varied from year to year, over 70% of 11th graders earned a work-ready certificate for completion of the Next Skills Institute assessments. The National Health Standards assessment provides DLMHS with national comparison data. The teachers draw on the data to improve their instruction. (Unfortunately, student performance data on this assessment is not available.) For example, when students performed poorly on safety practices, the teachers designed some curriculum to address this deficit. The certification from both assessments is added to the students' electronic portfolio. Eleventh graders also learn medical terminology, which is particularly helpful to them as they are concurrently enrolled in physiology and much of the medical terminology curriculum relates directly to that class. Furthermore, if students pass Health Science 11 with a B or better, they get college credit for it at the local community college for the medical terminology component of the course.

In 12th grade Medical Ethics, the curriculum focuses on helping students identify, pose, and analyze ethical issues in medicine. 11th and 12th grade students also have the option of participating in a half-day job shadow or 8-week internship at a local hospital. One 11th grade boy describes a job shadow he did with a cardiologist: "I was hands on with the doctor. I followed him around and saw what he did. I had to write a reflection to see what I actually learned and it was a good experience." Another student, a 12th grade girl, described an internship she did for a pediatrician. She remembers:

I got to really interact with the patients and learn from them. I also got to learn from the nurses and doctors. I've learned that the medical field is a stressful environment, but it's a fun environment because everybody bonds over helping sick people or learning about a new disease.

Although off-site opportunities are interesting and enjoyable for students, they are tremendously labor intensive to implement and there are not enough spots for the majority of students to participate. Students have to complete an application, take a TB test, pass a HIPAA test, and have good citizenship; those students are given first priority at these opportunities. The school is trying to expand the number of internships available to students but it also requires considerable staff time to secure these opportunities. Therefore,

⁸ Work-ready skills come from the Next Skills Institute and cover skills such as valuing diversity at work, listening, communication, and interpersonal skills. These were taught through four to eight modules. Students were assessed on each module. More information can be found at www.wplrc.losrios.edu National Health Standards are integrated across the Health class curriculum 9th-11th grade and assessed through a tool designed by the National Consortium for Health Sciences. The assessment covers 11 standards: 1. Academic Foundation (Human Structure and Function, Diseases and Disorders, Medical Mathematics); 2. Communications (Oral and Written); 3. Systems (Healthcare Delivery Systems); 4. Employability Skills; 5. Legal Responsibilities; 6. Ethics; 7. Safety Practices; 8. Teamwork; 9. Health Maintenance Practices; 10. Technical Skills; and 11. Information Technology Applications. More information can be found at <http://www.healthscienceconsortium.org>

DLMHS has spent more energy pushing work-based experiences into the classroom through e-mentorships, speakers, and interdisciplinary instruction so they can impact more students. In most years, only about 10% of students participate in job shadows and internships. According to one community advisor, “A lot of the work happens in the classroom so it can reach more kids. I think that DLMHS, like a lot of schools, has this pressure that it has to do internships. . .but that’s not a sustainable model.”

He adds that strong work-based learning requires an integrated approach that includes integrated curriculum, speakers, and career professionals interacting with students, as well as in-the-field opportunities.

Overall, the health classes provide students who want to pursue a health care career with early access and opportunity in these fields and they are also helpful to those students not pursuing health care careers. One 12th grader describes it as good “background knowledge” and general preparation for college and career. As a 10th grader explains, “[Our health teacher] is teaching us how to write a resume and teaching us how to get prepared to do what we want to do.”

In addition to the required health classes, students have access to additional health-related courses. All students take physiology in 11th grade. A highlight of physiology class includes a field trip to UC Davis Medical School, during which students get to see and touch real cadavers and hold their organs under medical students’ supervision. Students can also take electives such as Sports Medicine, Medical Math, AP Bio, and AP Statistics to further prepare them for health care careers.

The school recently stopped offering non-health-related electives such as yearbook and leadership because they found students were opting out of important classes like physics for these classes. Students are permitted, however, to take electives at the local community college.

Joining a professional organization

All students also have the opportunity to join HOSA, a national organization for high school and college-level students considering a career in health care. The organization has about 132,000 members. DLMHS has its own chapter and about 20% of students are members. Each year there is a different service focus, such as cystic fibrosis. The students raise money to attend the state leadership conference each year, which rotates between southern and northern California. About 30 students per year are able to attend. At the state conference there are competitions. DLMHS students have placed at the top of the competition at the state and national level for several years in the medical reading team event for which they read five books and then take a test and answer questions from judges about the books. A recent graduate is serving as the current national president of the organization. Another recent graduate cited HOSA as an invaluable component of his high school education, providing him social and leadership skills. Membership in this organization gives the students leadership opportunities and opportunities

to connect with students from across the region and state who share their own interests. It is another step to their seeing themselves as future professionals.

Partnering with the community

Community partnerships make much of the health care focus possible. Partner organizations, health professionals, and community activists serve on an advisory committee. Advisory committee members include representatives from local state and community colleges, medical practitioners, representatives from local hospitals and community clinics, a workforce development expert, a representative from the county office of education, and a career coach. According to one advisory member, “It represents a good range of the community, particularly the industry sector.”

In quarterly meetings, the advisory committee supports the development of the health science course curriculum, provides feedback on the interdisciplinary units, evaluates student projects, conducts mock interviews, supports field trips, and helps with outreach for C3 day, e-mentorships, job shadows, and internships. One member describes the strength of the committee as “vetting the curriculum, making sure it’s connected to industry, making sure that the student supports are there.” The advisory committee also developed a list of 10 work-ready essential skills as they apply to high school students that were instrumental in the founding of the school. In particular, teachers have learned from the work-ready skills the importance of students working in teams, which has influenced how the teachers teach. One teacher:

I do a lot of collaborative learning experiences because I feel like that’s what they’re going to have when they get out of here. They’re going to have to deal with a lot of personalities. They’re going to have a job and they’re going to have to find a way to bring strengths and weaknesses together.

The advisory members also work closely with teachers to discuss specific types of collaborations that might be possible. For example, they arrange for representatives from Planned Parenthood or the local Latino Community Health Clinic to speak with students when they are discussing culturally responsive health care. Another member of the advisory committee hopes to integrate the role of community health providers, particularly in rolling out the Affordable Care Act, in the way DLMHS portrays possible career options for students. She hopes to share with the students the kinds of preventative care that are available and “different types of roles that you can play in health care that isn’t doctor-nurse.”

Pedagogy for the 21st Century: Preparing Students for the Jobs of the Future

Although DLMHS teachers infuse their curriculum with a health care theme, equally important to their instructional approach is the way they teach students to prepare them for

jobs that do not yet exist. Principal Castro is keenly aware that there are essential skills that students will need to be able to engage in knowledge-producing work as adults, these include critical thinking skills, working with others, and communication. For this reason, Castro directs her teachers to engage in cooperative learning and project-based instruction and to require student presentations. These are the same ideas advanced through the Common Core. She tells her staff:

I know you guys love your curriculum, and the curriculum is important, but the process is the most important thing because we don't even know what they're going to need to know or learn. They need to learn the learning process. So that's why we really heavily emphasize project-based learning, cooperative learning, presentations. We try to have [students] interact with adults as much as possible so they can sharpen those communication skills. We give them a lot of opportunity for public speaking so that they have those kinds of skills that they're going to need for whatever field they go into that we don't even know, might not exist yet.

DLMHS enacts this commitment to work-based skills by the way it organizes its day. Block scheduling enables students to have 90-minute blocks of instruction 4 out of 5 days a week. These longer blocks of time facilitate more group work and in-depth investigation. It is particularly useful, as well, in the lab science classes. One teacher talks about her approach:

For me, a student-centered school or learning environment [occurs when] the teacher is more of a facilitator in student learning and directs and guides the students into learning through different activities and projects. There's very little direct instruction. What I do is I give the students information and then try to help them apply it to different situations.

Teacher survey data reinforces the teacher's perspective (see Table 13, page 35). It reveals a high level of satisfaction with the schedule as well as a commitment to a teacher's role as a facilitator of student learning rather than the sole purveyor of knowledge.

Project-based learning is common in many classes at DLMHS. From project-based learning, students can engage in critical thinking, applying abstract ideas in a novel way, to really test and demonstrate what they know. For example, in an economics class students were studying the impact of the global economic crisis on their community. They interviewed community members and took photo documentation of the economic impact on housing and access to health care. It culminated with an oral presentation in which students had to share their learning using economic terms. Student survey results reinforce the frequency of project-based learning (see Table 14, page 35).

Table 13: Supporting Student Learning

Teachers agree (strongly agree) that...	DLMHS	Comparison schools
The school day is organized to maximize instructional time	100% (72%)	78% (20%)
My role as a teacher is to facilitate students' own inquiries	100% (44%)	84% (37%)

Source: Teacher survey

A Community Advisory Board member sees the value of project-based learning in providing students with the kinds of skills they will need in their adult lives. "It connects the students to hands-on activities that are linked with industry and they do their projects, which are usually presentations, that are always amazing from freshman year on."

Table 14: Project-Based Learning

Students agree...	DLMHS	Comparison schools
I work with other students on projects during class	98% in at least 2 classes (75% in 3 or more classes)	79% in at least two classes (43% in 3 or more classes)

Source: Student survey

Working with others is an essential work-ready skill as well. To support student learning in this area many teachers employ and support group work. Beyond merely giving students an opportunity to work in groups, teachers teach them *how* to work together effectively. The student survey data reveals that students feel successful in this regard and therefore will be better prepared to work collaboratively with others beyond school (see Table 15).

Several graduates also cited the experiences they had working in diverse groups as key to their success in college. One explained that in high school:

We had to work in a group. The group was set up by the teacher. You didn't know the students that well and you had to work together. In college I've had that where you are working with others and you have no idea who they are or how they work but you still have to work as a team and complete a project.

Table 15: Learning in Groups

Students agree...	DLMHS	Comparison schools
When I work with a group, I share my ideas with the group	90% usually true (49% always true)	76% usually true (38% always true)
When I work with a group, I help my group figure out and fix any problems we face	90% usually true (56% always true)	75% usually true (37% always true)
When I work with a group, I consider everyone's ideas	87% usually true (51% always true)	75% usually true (36% always true)
I am evaluated on how well I work in groups	79% in at least two classes (39% in three or more classes)	49% in at least two classes (22% always true)

Source: Student Survey

The value placed on group work in the classroom is also measured by the fact that students are evaluated by their skill at working in groups.

Presentations are widely implemented to develop students' communication skills. A 10th grade student also talked about opportunities they have had to be an expert in their class, "[The teachers] will give you a subject and you'll research it and then you teach it to the class and do worksheets and power points and tests on it." The major interdisciplinary grade-level projects all have a presentation component as well. Student survey results indicate that presentations are used widely as an instructional strategy (see Table 16).

Table 16: Student Presentations

Students agree	DLMHS	Comparison schools
I give presentations for different purposes	87% in at least two classes (62% in three or more classes)	66% in at least two classes (27% in three or more classes)

Source: Student Survey

Assessment: A Focus on Mastery

Integral to DLMHS's instructional approach is a focus on mastery. The staff are committed to keeping their instructional approach focused on ensuring that students deeply understand what they are learning, rather than focusing on grades or marching through the curriculum. Teachers use assessments to gauge students' progress toward meeting the academic standards. Castro explains how the staff think about mastery:

We look for opportunities for students to re-learn and redo. Are the students learning and mastering the concepts that we want them to? If not, how can we give them the opportunities to learn? It is about meeting the standards or trying again. Not everyone learns at the same pace.

This perspective is diametrically opposed to that of many schools in which the teachers have to march through a pacing guide or feel, "I taught the curriculum; if the students didn't learn it, that is not my problem." A focus on mastery is fundamentally student-centered in that it keeps student learning at the center rather than being directed by teachers' actions.

Getting the staff on board with this philosophy has required the principal to invest in professional development and setting a clear expectation with staff. Castro shares:

It's taken a long time to really come to that realization. And some teachers are farther along than others in getting it, but I think this staff is way farther than any other group of people I've ever worked with as far as really looking at that.

She has invested in teacher training with national experts Billie Donegan and Doug Reeves on standards-based assessment. The staff examined toxic grading practices. In response to the training, Castro asks her staff to reflect on their own practices:

I ask them to constantly analyze their grade books. Does the grade of that student reflect what you know they can do and what they know? If not how can you address that? Because what you're going to give that student as a grade should measure their proficiency in what you're teaching. So how does that relate?

The focus on mastery has implications for many aspects of instruction including the purpose of homework, opportunities to redo assignments and tests, as well as attitudes toward grades. After in-depth discussions, the teachers decided that the purpose of homework is to practice. For example, in an upper-division English class, a student asks the teacher, "What does it mean if I got a zero on my packet?" The teacher responds, "It means you need to make corrections and turn it in again." This interaction was free of judgment and guilt; it was a matter-of-fact demonstration of a culture of acceptance, where learning is clearly held as the goal.

A science teacher reinforces this attitude. He checks if homework is done or not done, not if it is correct, but students have to complete all homework to take an assessment.



He explains that if students come to class on an assessment day and they haven't completed their homework, they sit in the back of the room and finish it before they can take the assessment. It is not about accruing points but about preparing adequately for the test. He expresses the philosophy about students having to postpone taking the test as:

We know kids learn at different paces, then you have to be flexible about how you assess them and when you assess them . . . If you are not ready then why sit there and take a test that you aren't ready for? Who is going to win? Nobody!

This approach is common in many classes at DLMHS and it honors the student as a learner, by being tailored to individual learning needs and by keeping learning and success as central goals. The take-away for students is that teachers are fair and flexible, and learning is not a pass-fail endeavor.

The commitment to student success is reinforced by requiring students to redo some assessments until they are of satisfactory quality, demonstrating mastery. Essays, in particular, have a basic level of proficiency required. For example, when students do not demonstrate proficiency in their essays, they are graded DNMSDO (which stands for Does Not Meet Standard Do Over). The students then must rewrite the essays, or demonstrate their knowledge in another way.

In other cases, for quizzes and tests, students can retake them to improve their grade. For example, in an English class students who failed a quiz on Act 2 of *Macbeth* had to create a poster storyboard of Act 2. As the teacher said, redoing it is "more work for the student but they'll never forget Act 2." This is a common theme across the DLMHS staff. If students do not demonstrate proficiency, they can redo the work in another way. The assumption is that the assessment may not be best suited to a student's learning style. For example, several science teachers provide makeup assessments using a different format from the original one, such as free response or short answer, or even asking students to draw what they know or engage in a conversation with their teacher to demonstrate their knowledge.

One way that teachers implement the mastery orientation is through i-contracts (individual contracts), for students who are close but not quite passing their classes. I-contracts lay out steps for students to take to pass their classes. One teacher explains how they work:

All the teachers do it a little bit differently, but some will map out, "I need you to come meet with me and do study sessions at advisory and then retake this test," or "I need you to write this paper and then resubmit it." So the i-contract is a cool way to have kids bring up their grades.

DLMHS’s focus on supporting student learning and revising work until it meets the standard is reinforced by student survey data (see Table 17).

The focus on mastery has been a challenge for some parents, who want their children to be able to improve their grades by collecting points for completing work even if they are failing tests. Principal Castro stresses:

Shifting the parents’ mindsets is the hardest thing. It’s about learning. Not, do they have points? We don’t really take the late work, we try to put the emphasis off of that and say let’s focus on how you’re going to show me you do know it now so that I can assess your proficiency of mastering these standards.

The work to shift parents’ mindsets happens through one-on-one conversations between teachers or the principal and parents in response to their concerns.

DLMHS’s focus on mastery also conflicts with district policy. When the school started they did not give D grades because it does not demonstrate proficiency so they did not want students to have that option. However, board policy does not give individual schools discretion over what grades they can give, so the school had to institute D grades because the other schools in the district do. The district is concerned that eradicating Ds would increase their already high dropout rate. Castro disagrees, however, and wishes that the school would be allowed to pilot its system. “We’ve seen huge results [from] having high expectations and supporting students to meet them.” In addition, students who receive Ds in a class cannot make it up in summer school because they have already received credit for the class. Parents support the principal’s position as well. One parent expresses his frustration:

And to me to tell a kid that it’s ok to barely pass or not know what you’re doing; I’m not ok with that. . . . I hope my daughter is not satisfied with that. We talked about it and she was against it.

Despite district challenges, DLMHS clearly conveys to its students that their learning is of primary importance and that they can have multiple opportunities and ways to demonstrate their knowledge and skills. The pervasiveness of this culture is evident in how students behave in class freely expressing when they do not understand.

Table 17: Focus on Mastery

Students agree...	DLMHS	Comparison schools
My teacher checks to make sure we understand what he or she is teaching us	83% in at least two classes (49% in three or more classes)	59% in at least two classes (32% in three or more classes)
My teacher often asks me to revise my work after I get feedback from teachers or other students	69% in at least two classes (41% in three or more classes)	44% in at least two classes (19% in three or more classes)

Source: Student Survey

Supporting Student Success

I do believe that they [DLMHS teachers] prepare them to succeed.

—Parent

DLMHS's mastery orientation lends itself to supporting student success. Unlike large traditional high schools, where students easily slip through the cracks, DLMHS staff rally around each student to ensure he or she is on track for not only the school's high expectations but also for the individual's goals. However, DLMHS is a rigorous environment and expecting a high level of academic performance without providing supports leads to inequitable student access to success. Since DLMHS is committed to preparing all students for success in college and career, it recognizes that many students will need support. Supports are provided through specific classes such as advisory and health, in the ways the staff teach, and from some out-of-class supports. Despite the tremendous efforts of the teachers to catch every student, insufficient funding and external policies have limited the support the school is able to provide to struggling students, special education students, and English language learners.

Before classes even start in ninth grade, students receive support. All incoming ninth graders are invited to bootcamp, an extended orientation to high school at DLMHS. The goal, as one teacher explained, is to help students “not have the deer in the headlights feeling when they come on campus. We wanted them to already have membership.” The curriculum and length varies year to year because it is dependent upon teacher volunteers to make it happen. Curriculum has included how to use a planner, backwards planning, meeting teachers, team-building activities, and understanding the focus of DLMHS.

Advisory and health classes as a built-in safety net

DLMHS's commitment to supporting students is built in to the daily schedule through the advisory program. In response to student and teacher feedback, DLMHS has invested considerable energy into revamping the advisory program. In the first few years of the school it was used primarily as a study hall for struggling students to provide them with in-school time for studying and to make up or redo work. Because only struggling students had to attend, it felt to students like punishment.

Advisory is currently required for all students and has class sizes of 27, slightly lower than other classes, which average 35 students per class. Although it is on the schedule as a daily class, offered right before lunch, most students attend 3 days a week. On Mondays, only students who have a grade-point average below 2.5 are required to attend. On those days, students meet with their advisory teachers to check and discuss their grades as well as set goals for the week. Once a week, each grade level gets an extended lunch because they are not required to attend advisory. Advisory is offered to 9th, 10th and a combined 11th/12th grade and taught by a same grade-level teacher.

In advisory, students can stay in class to catch up on their work or they can visit another teacher's class, like office hours to receive tutoring from a teacher or peer tutor or

work toward mastery before retaking tests, quizzes, or rewriting papers or lab reports. One teacher comments, “It’s a great time for students to catch up and to get help for the next day.” A 10th grader adds, “Kids can go to any subject or teacher to get help, and they can collaborate with the teachers or students as well.” Parents also appreciate the supports provided to students through the advisory program. One Latino parent leader describes how often parents and students come to their teacher when they are failing and it is too late to make changes, but advisory affords students a “preventative measure. You go back and if there’s something you don’t understand you can go ahead and talk to the teacher and get feedback right away. I think that is really important.”

Rather than attending advisory class, advanced students can apply to be peer coaches. These students, about 60 each year (10% of the student body), meet with a designated advisor to learn how to coach students and then are assigned to different teachers’ classrooms in math, science, and English during advisory to provide peer tutoring to students. A 12th grader describes it:

I was a tutor for math and English. . . kids would come to me and they [say], “I really need to get this because I’m taking the PSAT or taking the CAHSEE.” So I was able to help them and other academic coaches were able to help them, and it was just like a big student effort for those who were academic coaches. We were able to come together and say, “Let’s help these kids.”

Having peer coaches not only provides students with valuable support, but also reinforces the knowledge and develops the leadership skills of the peer coaches. Furthermore, it creates a culture of collaboration and support among students.

Future thinking and goal setting are important aspects of the DLMHS approach to high school instruction. This goal setting happens primarily in health classes. Given the pathway focus, students are surrounded by the concept of linking what they are learning in school to what they will do professionally as adults—this in and of itself is inherently tied to both college and career preparation. A health teacher explains how goal-setting and conversations about the future are central to the culture of the school:

We have them thinking about goals, setting those goals, and actually mapping out how they would get there, and we do that from ninth grade into 12th grade. It’s interesting to see how it changes. I think just setting goals from the very start really helps with students and their experiences.

Throughout their 4 years at DLMHS, students do a transcript review three times a year to make sure they are on track to graduate with a-g requirements. Health teachers also check student attendance and make sure students who have missed a lot of school have support catching up. According to one health teacher, she asks her students:

Are you on track to graduate? Are you on track to getting to your post-secondary education goal? And, if you're not, what are the things you need to do to make sure you're getting credit or getting better grades?

In some ways, health teachers function more like typical advisory teachers, providing personalized guidance and mentorship. As one health teacher explains, "It's just being able to be there for them when they see that they need a little help." The students explain that the support begins in ninth grade as the students are required to sign up for an online college preparation website by the College Board, called My Road, that helps students explore colleges, majors, and careers. Eleventh graders expressed appreciation for this tool as it helped them sign up for the SAT and other aspects of the college application process.

One of the subjects that health teachers tackle is ethics, including cheating and plagiarizing. They put it in the professional context: "If your doctor wasn't ethical that would be a big problem. Just getting them to think about what they're doing and if they're being ethical."

Daily supports for students in class

Many supports for students are also provided to students within their classes. How many teachers' approach to instruction, in itself, provides support. As described in the previous section, teachers' commitment to mastery provides tremendous supports to students, enabling them with multiple chances to demonstrate what they know and excel in their classes.

Teachers also make their expectations explicit and clarify academic terminology as they introduce new topics or assignments. For example, when an English teacher reviews a new packet that students will turn in about *Frankenstein*, the students read each section out loud and then the teacher unpacks the meaning and expectations of each section. In another instance, in biology class as students are preparing to conduct a lab activity, they are asked to read the instructions for 5 minutes, using a highlighter or pencil to make notes. All students read, and then the teacher reviews the activity and asks students questions to check for understanding. He tells the students, "Check your work at each step so you don't go down the wrong path." As the students work on the lab in pairs, the teacher again advises them to "go through the exercise together and then demonstrate it to each other to reinforce your understanding." The emphasis the teachers place on ensuring that students understand the expectations is an equalizer, supporting all students to be successful, not just those for whom school may come easily or who have entered high school with the academic skills to be successful.

Teacher survey data reinforces these examples, illustrating that teachers are committed to supporting all students and tailor their instruction and supports to meet individual learning needs (Table 18, page 43).

Table 18: Teacher Support of Students

Other teachers at this school agree (strongly agree) ...	DLMHS	Comparison schools
Adjust instruction to meet the needs of each student	92% (16%)	60% (14%)
Provide extra assistance to any student who needs it	100% (60%)	87% (28%)
Pay attention to what motivates each student	92% (28%)	58% (10%)

Source: Teacher Survey

The culture of student support also encourages students to reach out to their teachers to seek support. Ninety-two percent of teachers report that students have met individually with them to reflect on their progress and receive support. All surveyed teachers report that their students have formed close academic advising or mentoring relationships with them or another teacher.

Supporting special populations of students

Although DLMHS works to support its small populations of English learners and special education students (4% each) through mainstreaming, it has struggled over the years to provide adequate supports for these students and to attract these students to the school. The principal believes DLMHS's percent of special education students is lower than the district average of 10% because some special education middle school teachers steer their students away, misperceiving it as too hard. Principal Castro is working to build relationships with the special education teachers in the area middle schools to correct the misperception and they are seeing a gradual increase in the special education population enrolling in the school. Because of early success with previous special education and English language learning students, in the 2013-14 school year, DLMHS has experienced sizeable increases in these student populations: up to 6% English language learners and 8% special education students.

For the most part, students take the same classes as their peers and aides push into the classrooms. DLMHS has two resource teachers and two special education aides. The resource students take a resource support class, and the resource teacher pushes into algebra, English 9, and Biology for those students as well. They are mainstreamed into their other classes. The special education students benefit from the school's hands-on approach to instruction and engage with classmates and the material at a level that works for them. According to a science teacher, a special education aide does an excellent job of holding high expectations for students with IEPs with the minimum amount of accommodations.

We met with one student this semester in an IEP, and the [aide] said, "I know you can do this without me taking notes for you. You can do it." And [the student] is passing. She's doing better. She struggled all the way through ninth and 10th grade and we worried about her. And now she's actually passing my class. It's outstanding.

In the school's first few years there was insufficient support for resource students and few made it to graduation, but providing students with the support class and push in support has helped a great deal. The principal describes the current resource teachers as "very passionate about getting them the support that they need."

About 20% of the students at DLMHS are either English language learners or students that were previously designated and have been redesignated. The school also offers an English language support class to the approximately 35 students who need it. But many of the English language learners also receive special education services and therefore take the special education support class instead because there is only time in the schedule for one support class. Due to a lack of funding, the school recently lost its part-time aide that pushes into students' classes. It can be challenging to offer the students sufficient support.

Insufficient funds and a lack of autonomy limit student support

Despite the tremendous commitment and hard work of the classroom teachers, multiple factors limit the support that can be provided to students outside of the classroom or for specific populations of students. A limited budget and lack of autonomy have reduced the resources available to provide adequate support personnel during the school day. Although the principal has autonomy over hiring teachers, she does not have autonomy of the distribution of funds for support personnel beyond the specific support providers assigned to her school. What make this situation even more challenging are the changes from year to year in how staff are allocated to her site. For example, in 2012 she began the year with a vice principal assigned to her site part-time and a counselor working one day a week; part way through the year, a different counselor came to her site on a second day. In 2013, the school no longer has a vice principal but has a counselor full-time. The lack of control over the budget and counseling staff serves as an impediment to realizing the personalized approach to student support that is a part of the school model. As a result, according to one teacher, "More falls on teachers to catch students who are falling through the cracks."

In addition, the school's remote location inhibits students staying after school because they have a bus to catch or need to be picked up by parents at certain times. However, some teachers do hold study sessions for major exams but these happen on more of an ad hoc basis. Students short on credits can enroll in Cyber High, an online credit recovery program that students can work on at home, and only need to stay after school to complete the Cyber High quizzes and tests with a teacher. Other students short on credits go to the local community college or enroll in summer school.

Collaboration and Professional Development

Building the vision for a new school and fleshing out how it is enacted in practice requires thoughtful consideration, sufficient time, and adequate supports. The principal's early investment in professional development and collaboration time built a strong foundation. She recognizes that building a student-centered school requires a substantive investment in the teachers to provide them with adequate training, collaboration time, opportunities to learn from each other and even the collegial support to sustain them through the challenges of being teachers.

Beginning by Building Relationships and Vision

Before the school even opened, the founding teachers hashed through the difficult work of clarifying their vision and determining how it translated into policies and practices. The principal recognized that the staff would be most productive if they took time to invest in building trusting working relationships with each other. This work was not always easy. The principal recalls, "Along the way we really had to do some relationship building and communication building to understand how to communicate with each other in a healthy debate and not an attacking mode."

After they strengthened their relationships they were able to make tough decisions about the school. The principal approached this process by trying to engage all the staff in a consensus model of decision-making. She explains, "It was really just very impor-



tant from the beginning to make sure that everyone had input and that we fed off each other’s ideas and came to the best possible conclusion.” The principal believed that, although challenging at times, real debates with each other would allow the staff to come to more thoughtful conclusions about what would be best for students.

I really feel like healthy debate among professionals is important because it helps you bring out the best ideas instead of just saying, “Ok, well let’s vote. Who wants this, who wants this?” Why do we want this and what could be the outcomes?

The principal found resources to support teacher learning and refinement of their practice. The staff benefitted by having early exposure to other schools with a health-themed focus, including their interdisciplinary units. The founding staff was able to build off these units and adjust them to align them to the school’s vision. For example, the ninth grade interdisciplinary unit, Good Eats, was taken from another school and then modified. In the early years they also attended professional development from key leaders, such as Bill Daggett, on issues of rigor, relevance, and relationships, that helped inform the early vision of the school. Since becoming a Linked Learning school, it has benefitted from numerous resources through ConnectEd, on such topics as standards-based grading, integrated lessons, performance-based assessment and workforce development programs.

Internally, they invested staff time defining learning and mastery. For example, when the staff committed to a mastery orientation to student learning, they had to think about the ramifications for accepting late work, as well as how they would define proficiency and support students who were not demonstrating proficiency. From these conversations, the staff determined that they wanted to institute a no D policy and they developed their model for advisory. However, as a self-reflective staff, they continue to evaluate their practices by asking themselves how effective their policies and practices are, and by identifying challenges and discussing possible solutions. These discussions have resulted in changes, particularly in how they determine student grades and the substance of the advisory program. Making changes mid-stream can be challenging and unnerving for some staff, but according to the principal, “Most people understand that every time we do that it makes it better.”

The principal’s early commitment to a clear vision for the school and supporting her staff to meet students’ learning needs continues to resonate throughout the staff as the teacher survey data illustrates (see Table 19).

Table 19: Principal Focus on Student Learning

Teachers agree (strongly agree) that the principal...	DLMHS	Comparison schools
Communicates a clear vision for the school	96% (84%)	84% (24%)
Understands how children learn	96% (80%)	84% (24%)
Presses teachers to implement what they have learned in professional development	92% (60%)	73% (18%)

Source: Teacher Survey

A Commitment to Collaboration and Professional Growth

With many founding teachers still on staff and a commitment to collaboration, DLMHS continues to benefit from close relationships among staff and strong support from the principal to create interdisciplinary units. These units in turn support the personalized approach teachers take to foster student learning.

Each week, the school has an early release day that provides teachers with 90 minutes for collaboration time. These collaboration Wednesdays rotate through a series of groupings, including grade-level teams twice a month, departments one a month, and whole staff once a month. How the time is used is flexible and dependent upon teacher need, but the principal works hard to protect the grade-level time because, as she says, “That’s what [the teachers] really need most.” Teachers find the grade-level collaboration beneficial for making sure that they align their work with each other, support each other’s work, and manage student workload. As one health teacher explains,

I can do things here in class that help the [students] with their physiology or English. If they’re doing a big assignment there, I can try to do something that supports what they’re doing. So I feel like that helps a lot with the student experience. They know that we’re communicating with each other. I think that just makes them feel better about what they’re doing.

The principal sets her expectations that collaboration time be used productively and stays informed of each grade-level focus by collecting the agendas and minutes from their collaboration meetings. She tries to attend the meetings as well, but since they occur simultaneously, she cannot participate in all of their work all of the time.

Beyond the twice a month allocated grade-level team meeting time, the principal strongly supports the development of interdisciplinary units and recognizes their time-intensive nature for teachers. The grade-level teachers report that they can ask for a planning day and the principal will support it and provide them at least a couple of release days during the year to plan their units. “They use the time. They crave the time,” the principal explains. One teacher describes one such day, “We all went to [one teacher’s] house and we powered through a lot.”

The principal also provided the teachers with two paid planning days over the summer. A teacher describes how much more they can make out of their bi-monthly collaboration time when they have had big chunks of time over the summer to plan their interdisciplinary units and map their year. “And because we are teaching from scratch, we have the ability to look beforehand at those curriculum maps and come up with really cool integrations.”

Once a month, department-level collaboration is used for vertical articulation, curriculum development, and for “bouncing ideas off each other.” According to one 12th grade teacher, she finds it helpful to know what the teachers in her discipline taught in the 9th-11th grades and how they were aligned. She reports that when students say they cannot do something, she responds, “You can do this and you’ve done it before three times.” She finds it rewarding to work in such an aligned fashion with her colleagues: the opportunity for teachers to be part of a staff deeply committed to their students; to have time to work closely with their peers and engage in self-reflection about their lessons; and to build mutual respect and ultimately better instruction for students.

Teacher survey results show strikingly positive outcomes from the high-quality grade- and department-level collaboration that happens among teachers (see Table 20).

Whole staff collaboration time is also a helpful time to discuss school-wide priorities, such as preparing for Western Association of Schools & Colleges (WASC) accreditation. As a small staff with a collaborative approach to decision-making, the staff appreciate the flexibility they have over how they use the meeting time. One teacher explains,

It’s nice that we can be flexible with that time. We may have planned this topic three weeks ago but something came up so we are going to talk about this urgent topic now and push what we planned until next week. We set our own priorities for how we want to use that time.

This level of teacher ownership over the content of their work fosters a deep commitment to the school and to each other among the staff that ultimately benefits the students.

In addition to the weekly collaboration time, DLMHS has three all-day professional development days. Most years they have discretion over how they use that time, although in some years a day is determined by the district. DLMHS opted to focus on curriculum or school culture issues, such as developing integrated units or addressing positive approaches to discipline.

The principal’s commitment to collaboration time and the teachers’ commitment to their students establish a culture of trust among the teachers and an openness to exam-

Table 20: Instructional Coherence

Teachers agree (strongly agree) ...	DLMHS	Comparison schools
Curriculum, instruction, and learning materials are well coordinated across different grade levels at this school	92% (32%)	58% (12%)
There is consistency in curriculum, instruction, and learning materials among teacher in the same grade level at this school	96% (52%)	58% (11%)

Source: Teacher Survey

ine their work. Although there is individual and grade-level variability, some teachers report that their teams are “really interested in growth and adaptation and change.” Teachers report that as a result of collaboration they are able to let go of curriculum or strategies that they find are not working for their students. For example, the teachers changed their grading systems to reflect their focus on mastery learning. The survey data reinforces these anecdotes (see Table 21).

The emphasis on collaboration, relationship-building, sharing, and risk-taking leads to the formation of strong relationships among the staff. Teachers in one grade level report “enjoying each other’s company quite a bit.” In their off time, they take vacations together and socialize together. These strong relationships spill into school as well and lead to informal planning and conversations about students. This particular team eats lunch together most days. But other teachers collaborate informally as well. For example, a health teacher noticed that her students were all struggling with bounding paragraphs in their writing. She was able to find out from their English teacher how she taught about paragraphs so she could “remind her students” of what they had learned in English. This is a benefit of a small school as this teacher only had to turn to one English teacher and knew her students had a common experience on which she could build. Some teachers also form their own tight-knit collaboration. For example, two social studies teachers, one who teaches College Prep (CP) and one who teaches AP, regularly plan their curriculum together.

Table 21: Teacher Analysis of Their Teaching Practice

Other teachers in my school...	DLMHS	Comparison schools
Are engaged in systematic analysis of teaching practices	92% (36% strongly agree)	61% (12% strongly agree)
Review student learning and understanding in order to adjust their practices	96% (32% strongly agree)	75% (11% strongly agree)
Are engaged in systematic analysis of student performance data	84% (36% strongly agree)	63% (10% strongly agree)
Sometimes clarify standards for student learning through in-depth discussion and analysis of student work	72% (32% frequently)	57% (15% frequently)

Source: Teacher Survey

Making Decisions Close to the Classroom

A school culture that is responsive to student needs is fostered by keeping decision-making close to the classroom and connected to student experience. Each grade level has a teacher representative who serves on the school’s Leadership Team and who was carefully selected to represent most of the core academic subjects. Together the Leadership Team discusses school-wide issues, makes agendas, and facilitates the grade-level collaborations. The team also helps shape the focus for the three professional development days each year. Teacher survey data reveals that 100% of teachers agree (52%

strongly) that when making important decisions the school always focuses on what's best for student learning. In comparison schools only 62% agree (14% strongly) with the assertion.

As mentioned previously, the staff also try to honor student voice in improving their school. In preparation for WASC accreditation, they brought a group of students to their professional development session and held a fishbowl on areas for improvement. The students surfaced three core areas for improvement:

1. The advisory program,
2. Support of incoming ninth graders, and
3. Communication among grade-level teachers.

From this fishbowl, the staff divided into three committees, each tasked with addressing these challenges. To support this work, one of the teachers, who is deeply involved with Facing History in Ourselves, arranged for training from that organization on creating an inclusive classroom situated in an inclusive school. As one teacher explained, these professional development sessions really helped him think about how to better reach students.

Conclusion

DLMHS provides an opportunity for Antioch students, particularly low-income students of color, to prepare in authentic and substantive ways for college and a career. In just a few years the school has established a strong track record in providing students with access to rigorous coursework through project-based instruction. While many schools with career pathways focus on internships and job shadowing, DLMHS has found a way to authentically infuse its health care focus throughout its curriculum. It has used its health care focus as a vehicle to create interdisciplinary, project-based, and hands-on learning experiences for students that both engage students and provide them with critical work-ready skills, such as collaboration, critical thinking, and communication. Furthermore, the school's commitment to mastery keeps the focus on student learning.

DLMHS's success is due to multiple factors, including early district and community investment in the school. The district demonstrated an early commitment to the school by hiring a school leader two years prior to opening the school and founding teachers 9 months prior to opening. This unique and expensive investment proved invaluable to the school's ability to open with clarity of vision, purpose, and practice. The district's commitment to engaging community leaders in school design and the principal hiring process ensured that a school was created that was sensitive to and able to meet community needs. Principal Castro's clarity of vision—commitment to a vision setting process, to professional learning for her staff, and to a mastery orientation—continues to benefit the students.

DLMHS's clarity of values has helped it adapt and manage challenges as they have arisen. It is the opinion of the author that many of the challenges stem from being part of a larger district system committed to ensuring that they are consistent in the enforcement of policy. The author believes that DLMHS would benefit from opportunities to have some autonomy in defining its own enrollment, grading, graduation, and staffing policies. Because of its students' success, DLMHS also has to combat the constant misperception that they enroll higher achieving students. Correcting this misperception requires DLMHS to be proactive in working with special education teachers and actively recruiting all students to consider applying to the school as well as communicating its commitment to all the students in the community clearly.

Fundamentally, DLMHS staff demonstrate a commitment to self-reflection and meeting students' learning needs. They know that while their vision remains constant, how they enact it in practice is likely to evolve over time. Their responsiveness to students and student data led them to revise their advisory program, grading policies, support for ninth graders, and communication with students. The cycle of continual reflection and improvement in service of student learning illustrates how they keep students at the center.

DLMHS dramatically increases opportunities for students in their community as exemplified by test scores, AP test taking rates, graduation rates, and college enrollment rates that far exceed others in the district, particularly for African American, Latino, English learners, and low-income students. DLMHS students also exemplify their success through their eagerness to learn, commitment to strive beyond what they thought they were capable of, and their pursuit of college and professional careers. DLMHS is a school that is truly serving its low-income and students of color well.



Appendix A: Methodology and Data Sources

Dozier-Libbey Medical High School

The case study employs mixed methods, with data drawn from multiple sources, including interviews, observation, and survey data. Interviews were conducted of school staff, parents, current students, graduates, and community members. Surveys were administered to teachers, students, and graduates. Observations were conducted of classrooms, staff collaboration, and professional development and performance assessment activities. Graduate college attendance data was gathered from the National Clearinghouse data set. Student achievement data was gathered from data available to the public from the California Department of Education. The table below provides a detailed accounting of the data sources.

Data Sources

Type of data source	Number
Administrator interviews	2
Teacher interviews	7
Student focus groups	2
Parent focus group	1
Community member focus group	1
Graduate interviews	6
Classroom and advisory observations	13
Student/teacher meeting observation	1
Student exhibition	1
C3 day observation	3
Student survey	201 surveyed Response rate 32%
Teacher survey	25 surveyed Response rate 93%
Graduate survey	62 surveyed Response rate 49%

Appendix B: DLMHS Course Progression and Graduation Requirements

DLMHS Course Progression

Ninth grade	10th grade	11th grade	12th grade
English 9	English 10 or Honors English	English 11 or AP English	English 12 or AP English
Algebra I or Geometry	Geometry or Algebra II	Algebra II/Trig or Pre-calculus	Pre-calculus, AP Calculus, AP Statistics Probability, Medical Math
Biology	Chemistry or Honors Chemistry (integrated units)	Human Anatomy, Physiology, Electives: AP Biology, ROP: EMC, Sports Med, Vet Science	Physics Electives: AP Biology, ROP: EMC, Sports Med, Vet Science
Foreign Language, or Visual/Performing Arts	Foreign Language or Visual/Performing Arts	Foreign Language or Visual/Performing Arts	
	World History or AP World History	U.S. History or AP U.S. History	Government/Civics Economics
Physical Education	Physical Ed/Health Ed		
Health Science 1	Health Science 2	Health Science 3	Medical Ethics
Explorations, Guided Study Tours	Explorations, Guided Study Tours, Community Service/Service Learning, E-mentoring	Community Service, Service Learning, Summer Externships Job Shadow	Integrated Externships, Internships, Community Service, Service Learning, Volunteer Activity, Employment

“A-g,” DLMHS, and District Graduation Requirements

Type of requirements	History	English	Math	Laboratory Science	Language other than English	Visual and Performing Arts	College Prep Elective and PE
“a-g”	3 years (including 1 year U.S. history and 1 semester U.S. Government)	4 years (college prep)	3 years (including Algebra I, II and Geometry)	2 years (including Biology, Chemistry and Physics)	2 years	1 year	1 year (only qualifying classes)
DLMHS	3 years (World History, U.S. History, Government, Economics)	4 years (college prep)	4 years (including, Algebra I,II, Geometry, Trigonometry)	4 years (Biology, Chemistry, and 2 additional years of lab or AP science)	2 years	1 year	Medical Ethics (a-g approved), 3 years Health, 2 years PE
District	3 years	4 years	3 years (including Algebra I)	2 years of Life and Physical Science (Not necessarily lab science), 1 semester of health	1 year of either foreign language or arts classes		65 credits 2 years PE

Appendix C: Graduate Profile and Senior Defense

Graduate Profile

**Dozier-Libbey
Medical High School**

VITAL Signs

EVERY DLMHS GRADUATE WILL BE:

Verbal: An Effective Communicator

- Utilizes reading, writing, speaking and active listening to communicate successfully
- Collaborates with others productively

Intellectual: A Complex, Critical Thinker

- Identifies and solves abstract problems
- Applies knowledge to real world situations

Technological: Technologically Competent

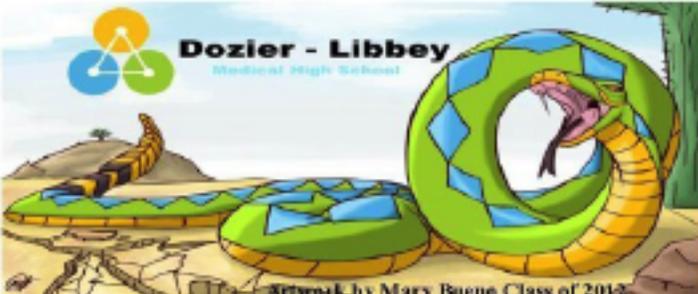
- Adapts to new technologies
- Utilizes technology ethically and effectively to communicate, solve problems and seek information

Academic: Academically Proficient

- Is health literate (both career aspects as well as personal)
- Seeks and utilizes resources effectively
- Meets UC/CSU a-g Requirements

Leader: A Productive Citizen of Good Character

- Participates in their community as a socially responsible citizen
- Exhibits cultural awareness and sensitivity
- Advocates for health related issues
- Responds and adapts to change
- Demonstrates proficiency in essential work-ready skills



Artwork by Mary Buene Class of 2012

Appendix C: Graduate Profile (cont'd)

DLMHS Senior Defense 2014

The **Senior Defense** is the capstone experience in your high school career at DLMHS. The purpose of the Defense process is for you to demonstrate, through evidence, that you have achieved proficiency of each of the VITALs and are successfully prepared for college and career. The Defense is comprised of four components: the Professional Portfolio, Artifact Reflections (KDRs), a Reflective Paper, and a Panel Presentation. Your objective is to demonstrate the depth of what you know and can do, while reflecting on your growth during the learning process.

SENIOR DEFENSE COMPONENTS:

1. Professional Portfolio: Over the course of your four years at DLMHS, you should have been collecting material, including samples of your work. For your Defense, you will be working with these Artifacts, "Proficient" examples of your work from various courses.

a. Required Defense Artifacts: Working with your Medical Ethics advisor, you will select one artifact from each of the following courses to "defend."

English:

- Junior examples: reflection essay, Harlem Renaissance project/essay, sci-fi research paper
- Senior examples: college essays, HeLa essay, Frankenstein essay

Science:

- Physiology examples: Disease & Disorders project, sci-fi research paper
- Physics examples: Force and Acceleration lab report, Project E.D.D.I.E.

Social Science:

- U.S. History examples: Oral History project, Murder in Virginia research paper, New Deal essay, '60s photo essay
- Gov/Econ/AP Psych examples: CSI project, International Economic Summit, personality project

Health:

- Health III: baby project
- Medical Ethics examples: HeLa essay, Frankenstein essay, Be the Change research project

Career:

- Job shadows, internships, volunteer work, career speakers, e-mentorship, public service or health-related clubs (both on campus and outside of school), etc.

Optional:

- Math, foreign language, ROP, art, band, or additional artifact from categories above

b. Each subject area artifact must be scored Proficient or above (i.e., at least an "8," "80%," "B," etc. or better) from that individual classroom teacher and validated.

c. Your collection of artifacts must demonstrate that you have met all the VITALs (some artifacts may actually meet more than one area).

d. The ideal artifact will provide you with an opportunity to reflect on your growth in meeting the VITALs and in your knowledge of the subject matter. The artifact should also provide you with an opportunity to make connections to other subjects.

Appendix C: Graduate Profile (cont'd)

DLMHS Senior Defense 2014, (cont'd)

2. Artifact Reflections (KDRs): In your Medical Ethics class, you will complete an artifact reflection using the provided template for **each** selected artifact. The reflection will demonstrate the following:

- a. What you know
- b. What you can do
- c. Your reflection on the learning process using VITALs language

3. Reflection Paper: Using the information from each of your artifact reflections, you will write a reflective paper that illustrates your response to the Senior Defense Essential Question:

- “How have you grown and changed as a student and as a leader over the last four years? How has your academic identity shifted over time and prepared you for more sophisticated thinking that is required in college and in your future career?”
- You must consider the trajectory of DLMHS student/leader as it relates to the added requirements of 4 years of health, science, and math.

4. Panel Presentation: Akin to a college dissertation defense or professional presentation, you will stand before a panel of educators, professionals, and mentors, where you will present the elements of your reflective paper. It must include the following elements:

- a. PowerPoint
- b. Visuals relating to your artifacts and experience as a DLMHS student
- c. Concrete examples of your artifacts (pictures, scans, graphs, etc.)
- d. Oral presentation that highlights and connects your thesis, your growth and change as a student, your mastery of the VITALs, and your artifacts.
- e. Timing:
 - i. Presentation: min 15 minutes, max 25 minutes (Medical Ethics Advisors will work with you on this)
 - ii. Question & Answer Session—10 minutes

ASSESSMENT:

Instruction and formative feedback for each component of the Senior Defense will be provided in Medical Ethics. Summative assessment will be provided as follows:

Component	Medical Ethics	Physics	English	Government/ Econ
Artifact Reflections	ALL reflections count as ONE assignment and are included in the “Senior Defense” category	NA	NA	NA
Reflection Paper	Included in the “Senior Defense” category	Included in the “Senior Defense” category	Included in the “Senior Defense” category	Included in the “Senior Defense” category
Panel Presentation	Included in the “Senior Defense” category	Included in the “Senior Defense” category	Included in the “Senior Defense” category	Included in the “Senior Defense” category
% of course grade	35%	20%	20%	20%

Appendix C: Graduate Profile (cont'd)

DLMHS Senior Defense 2014, (cont'd)

PROJECT DATES:

Assignment	Wickware Dates (2013 dates)	Melvin Dates (2013 dates)
Launch—directions reviewed English: VITALs Language Use Instruction on 4/8	4/8	4/8
Portfolio inventory	4/8 in class and HW	4/8 in class and HW
KDR writing (utilizing both inside and outside of class time) Important: If you do not have the required number of proficient artifacts, you will need to work with your Med. Eth. Advisor and other teachers to bring your artifacts to proficiency. This will impact your project management plan.	4/10, 4/12, 4/15, & 4/17 Suggested Pace: KDR #1 – 4/10 in class KDR #2 – 4/10 for HW KDR #3 – 4/12 in class KDR #4 & 5 – 4/12 for HW Review/Refine all 5 – 4/15 & 4/17	4/9, 4/11, 4/15, & 4/16 Suggested Pace: KDR #1 – 4/9 in class KDR #2 – 4/9 for HW KDR #3 – 4/11 in class KDR #4 & 5 – 4/11 for HW Review/Refine all 5 – 4/15 & 4/16
5 KDRs due to medical ethics	4/17 to Med. Eth. dropbox by 9 pm	4/16 to Med. Eth. dropbox by 9 pm
Reflection Paper instruction	4/19 (Woods)	4/18
Writing Reflection Paper * In BOTH Med. Eth. & English	4/22, 4/24, & 4/26	4/22, 4/23, & 4/25
Presentation instruction	4/29	4/29
Reflection Paper draft due	4/29 to Med. Eth. Dropbox by 9 pm	4/29 to Med. Eth. Dropbox by 9 pm
Live draft edits w/teacher & presentation work time/advice	During CST Testing 4/30-5/3 Printed copy of draft required	During CST Testing 4/30-5/3 Printed copy of draft required
Finalize & revise paper	5/6 & 5/8	5/6 & 5/8
Final reflection paper due	5/8 to Med. Eth. dropbox by 9 pm PAPER copy submitted by end of school day to ENGLISH	5/8 to Med. Eth. dropbox by 9 pm PAPER copy submitted by end of school day to ENGLISH
Finalize presentation	5/10	5/9
The Defense (See schedule given in Medical Ethics)	Mon May 13, 2012 8 am – 3 pm Tues May 14, 2012 8 am – 3 pm Wed May 15, 2012 8 am – 3pm Thurs May 16, 2012 8 am – 3 pm Fri May 17, 2012 8 am – 12 pm	

Appendix D: Project E.D.D.I.E.

PROJECT E.D.D.I.E.

Envision, Discover, Design, Invent, Execute
Paper Rubric/Checklist

APA Formatting: ____

- Running head (cover page and body pages).
- Headings and subheadings (bold and center/left).
- Double-spacing.
- Font: Times New Roman 12 pt.
- Margins: 1 inch around.
- Cover page.
- Works cited (current inventions).

Mechanics: ____

- No informal language (I, we, "the group," you) is present.
- Tense and tone are appropriate and consistent (past tense, active voice).
- Grammar and spelling are free of errors.
- Sentence variety is present.
- Paragraphs are specific to one topic sentence (no one-page paragraphs).

Concept Drawing: ____

- Neat.
- Description/labeled (keep labeling in one orientation).
- Basic general measurements.
- Figure caption is appropriate and formatted.
- Reflects the first prototype.

Free-Body Diagram: ____

- Neat.
- Labeled with appropriate symbols and variables.
- (If necessary) Multiple figures for different applications of Physics principles.
- Figure caption is appropriate and formatted.
- Reflects the final prototype.

Final Measurements Drawing: ____

- Neat.
- Accurate detail and measurements.
- Multiple viewpoints (side, top, front).
- Figure caption is appropriate and formatted.
- Reflects the final prototype.

Appendix D (cont'd): Project E.D.D.I.E.

(2x) Application to Physics Explanation: ____

- Restates Physics concepts and principles.
- Appropriately applies Physics concepts and principles to invention.
- Appropriately uses terms and vocabulary to discuss specific Physics content and principles.
- References figures to support the applied Physics concepts and principles correctly.
- Provides meaningful commentary to Physics explanation.

Limitations and Action Plan: ____

- 10-9: Identifies **multiple plausible approaches** to solve the problem, answer the question, or meet the challenge, including the limitations of each approach.
- 10-9: Weighs the relative effectiveness of proposed solutions or approaches and selects the approach most likely to be effective, with clear, detailed, and convincing explanations supported by evidence.
— — —
- 8-7: Identifies **multiple plausible approaches** to solve the problem, answer the question, or meet the challenge.
- 8-7: Weighs the relative effectiveness of proposed solutions or approaches and selects an approach that is likely to be effective, with clear, detailed explanations supported by evidence.
— — —
- 6: Identifies **one plausible approach** to solve the problem, answer the question, or meet the challenge and explains clearly why the proposed solution or approach is likely to be effective.
— — —
- 5: Identifies **an approach** to solve the problem, answer the question, or meet the challenge that is not likely to succeed or is based on guesswork and/or explanation for the proposed solution or approach is unclear.

Materials Needed and Construction Log: ____

- Materials needed: Accurate descriptions of materials used.
- Materials needed: Functions of each material described.
- Construction logs: Discusses specific procedures to build invention.
(**How** was the invention built?)
- Construction logs: Purpose of procedures taken is discussed.
(**Why** was it glued here? Why was it attached to this?)
- Materials needed and construction log: Reasoning and justification provided for construction and materials.
(Ex: A screw provides more surface area than a nail.)

Rationale, Relevance, Significance, Final Conclusions: ____

- Student clearly articulates his or her ideas about active citizenship, community engagement and social responsibility.
- Student clearly demonstrates knowledge and critical analysis of the important health-related issues facing the population.
- Student provides detail to support and supplement claims.
- Student provides meaningful commentary to discussion.
- Student conclusions display growth and reflection on health-related issues and physics invention.



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