



# Evaluation of the Oakland Health Pathways Project

Final Report

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Prepared by:  
**SRI Education™**

A DIVISION OF SRI INTERNATIONAL

Miya Warner  
C.J. Park  
Wei-Bing Chen  
Candice Bengé  
Anne Fikes  
Myles McMurchy

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## Executive Summary

This final evaluation report presents findings from the Oakland Health Pathways Project (OHPP), a joint initiative of Oakland Unified School District, Alameda Health System, and Alameda County Health Care Services Agency. The initiative is designed to improve educational and long-term employment outcomes for youth of color in Oakland (Alameda County), California, while expanding and diversifying the local health care workforce. It applies Linked Learning, an approach to college and career preparation that combines classroom learning with real-world work experiences.

### About the Oakland Health Pathways Project

In 2014, The Atlantic Philanthropies awarded two grants totaling \$21 million to agencies charged with working together to support and expand health career pathways for high school students in Oakland. Oakland Unified School District (OUSD) and the Alameda County Health Care Services Agency (ACHCSA) received a grant of \$11 million, and the Alameda Health System (AHS) received a grant of \$10 million.<sup>1</sup> To guide their work together early in the initiative, the partners developed a logic model that identified three intermediate-term goals:

- **Partnership:** Institutionalize partnerships between OUSD, AHS, and ACHCSA.
- **Work-based learning:** Increase the quantity and quality of work-based learning experiences and career exposure for OUSD students and particularly youth from underrepresented groups.
- **Health Pathways:** Create new health pathways in additional schools and enhance existing health pathways by serving more students, particularly youth from underrepresented groups, and increasing pathway quality.

### About This Evaluation

SRI Education has conducted a rigorous, multiyear evaluation of the OHPP in each year of its implementation, interviewing OUSD district and school staffs and representatives from the ACHCSA and AHS; conducting focus groups with health pathway students; administering a survey to 12<sup>th</sup> grade students in health pathways; and collecting administrative data on students' high school and early postsecondary outcomes. In addition to this comprehensive final report, SRI Education has produced a series of topic-focused research briefs: [How Education and Industry Partner on Work-Based Learning](#), Student Experiences in Health Pathways, and Student Outcomes in Health Pathways. The team from Augenblick, Palaich and Associates (APA) has produced a report assessing the costs associated with implementing health pathways in OUSD: Oakland Health Career Pathways: Resource Study.

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<sup>1</sup> The original series of grants also included #YesWeCode, a national initiative to increase the representation of minorities in the technology industry by offering training and job opportunities to primarily Black and Latino young adults, age 18–27.

## **Evaluation Findings**

This final evaluation report provides a comprehensive overview of the implementation and impact of the OHPP initiative. We begin by presenting lessons learned from the partnership. We then document the implementation of the OHPP in OUSD, including efforts to expand and enhance health pathways. We also draw on student survey and focus group data to describe students' experience in health pathways and their perceptions of their college and career readiness. Finally, we compare high school and early postsecondary outcomes for health pathway students and their peers in traditional high school programs and other career-themed pathways.

### **LESSONS LEARNED FROM THE OHPP PARTNERSHIP**

One of the key goals of the OHPP initiative was to establish and institutionalize a partnership between OUSD and local health care partners (ACHSCA and AHS) to provide health pathway students with increased opportunities for high-quality, authentic work-based learning experiences. In tracking the evolution of this partnership, the SRI Education team identified a set of lessons learned from the experiences of the OHPP partners. These include both broad principles for developing a successful partnership and specific practices for improving access to work-based learning:

#### ***Creating and maintaining an education-industry partnership***

- Establish a shared vision that builds on the existing goals and assets of each partner organization.
- Identify a clear leadership structure for the partnership, meet regularly, and plan for turnover.
- Understand each other's organizational structures and engage the appropriate decision-makers

#### ***Working together to build authentic work-based learning experiences***

- Reduce barriers to participation and thereby broaden access to work-based learning.
- Support students to obtain the health clearances they need for authentic exposure to medical settings.
- Engage teachers with industry partners to integrate work-based learning into the school curriculum.

### **PATHWAY EXPANSION AND ENHANCEMENT**

In support of OHPP's long-term goal to diversify the local pipeline of health professionals, the initiative aimed to increase and diversify OUSD's health pathway enrollment and enhance the quality of students' experiences in health pathways. This evaluation documented both the increase in health pathway enrollment between 2014 and 2019 and the strategies OUSD used to enhance pathway quality.

### ***Increasing the numbers and diversity of students enrolled in health pathways***

- The number of students in OUSD health pathways doubled from 2014–15 to 2018–19, driven by the introduction of four new pathway sites.
- The number of students from underrepresented groups in health pathways increased from 2014–15 to 2018–19.
- Two established pathway sites modified recruitment to create pathway enrollments reflective of school demographics.

### ***Creating new health pathways and improving students' experiences***

- New pathways focused on developing themes, course content, and projects relevant to their unique student populations.
- Both new and existing health pathways benefited from increased access to work-based learning experiences and leveraged the Atlantic Philanthropies resources to advance their specific needs.

## **STUDENT EXPERIENCE**

OHPP is a part of a movement toward student-centered approaches to education that make learning more engaging and relevant to students by providing meaningful career-related connections. We review how these efforts translated into the actual experiences of the students at the center of this work. Drawing on student focus groups, a survey of 12<sup>th</sup> graders in health pathways, and teacher interviews, we describe the students' perceptions of their work-based learning experiences and readiness for life after high school.

### ***Participation rates, quality, and integration of work-based learning experiences***

- Pathway students had access to and participated in a range of work-based learning experiences.
- Barriers to student participation were mitigated but not eliminated.
- Students report mostly positive feelings about Career-Technical Education (CTE) coursework and work-based learning experiences, but the connection between the two could be made more explicit.

### ***Perceptions of college and career readiness***

- Students reported increased clarity around career choices and interests.
- Students and staff saw increased postsecondary education planning and preparation.
- Students said they developed practical career readiness skills.
- Staff said students grew in confidence, self-efficacy, and sense of belonging.

## **STUDENT OUTCOMES**

We compared health pathway students' outcomes with those of students in the class of 2018 who had similar demographic characteristics and prior achievement but were in two other programs of study: 1) traditional high school programs, and 2) other career-themed pathways<sup>2</sup>.

### ***High school success***

- Health pathway students significantly outperformed traditional high school students in high school course credits earned and graduation rates. Health pathway student performance on these indicators was no different from that of students in other career-themed pathways.
- Health pathway student outcomes were no different in high school English Language Arts (ELA) and math achievement and drop-out rates when compared to students in traditional high school programs and in other career-themed pathways.

### ***Postsecondary transition***

- Health pathway students significantly outperformed traditional high school students in number of college eligibility requirements met and college enrollment. Health pathways' student performance on these indicators was no different from that of students in other career-themed pathways.
- Health pathway students were no different in completion of college eligibility requirements and, among those who enrolled in college, were no more likely to enroll in a 4-year (rather than 2-year) college when compared to students in traditional high school programs and in other career-themed pathways.

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<sup>2</sup> These analyses do not include the four pathways that were newly created as part of the OHPP initiative (two of which are in continuation high schools) because they did not serve the class of 2018.

## Chapter 1: Introduction

SRI Education presents its final evaluation report on the Oakland Health Pathways Project (OHPP), a joint initiative of Oakland Unified School District (OUSD) Alameda County Health Care Services Agency (ACHCSA), and Alameda Health System (AHS). The initiative is designed to improve educational and long-term employment outcomes for youth of color in Oakland (Alameda County), California, while expanding and diversifying the local health care workforce. It applies Linked Learning, an approach to college and career preparation that combines classroom learning with real-world work experiences.

Funded by The Atlantic Philanthropies, a limited life foundation, the OHPP began in 2014. SRI Education was engaged from the outset to evaluate the initiative. This comprehensive final report describes OHPP implementation, distills lessons learned on effective cross-sector partnerships and delivery of authentic work-based learning, describes students' experience in health pathways, and provides findings on students' high school and early postsecondary outcomes.

These findings and lessons learned are timely because the health care industry is projected to account for about a third of total U.S. job growth through 2026 and includes 20 of the 30 fastest-growing occupations nationally (Center for Health Workforce Studies, 2016; Kacik, 2017). Moreover, people of color are underrepresented in the majority of health fields (U.S. Department of Health and Human Services, 2017). For example, while Latinos make up nearly 40 percent of California's population, they compose only seven percent of physicians (California Future Health Workforce Commission, 2019). Findings from this Oakland initiative can help other communities better align K–12 education and student experiences with projected local labor needs and increase access to authentic work-based learning experiences for low-income students and underrepresented minorities.

### **About the Oakland Health Pathways Project**

In 2014, The Atlantic Philanthropies awarded two grants totaling \$21 million to agencies charged with working together to support and expand health career pathways for high school students in Oakland. OUSD and the ACHCSA received a grant of \$11 million, and the AHS received a grant of \$10 million.<sup>3</sup>

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<sup>3</sup> The original series of grants also included #YesWeCode, a national initiative to increase the representation of minorities in the technology industry by offering training and job opportunities to primarily Black and Latino young adults, age 18–27.

## Project Partners

- **Oakland Unified School District.** OUSD serves approximately 36,000 students in district-run schools. Nearly one-third of them speak a language other than English at home, and over 70% receive free or reduced-price meals (California Department of Education, 2019a). Student enrollment across OUSD is approximately 24% African American, 13% Asian, 42% Hispanic or Latino, 12% white, and 7% other races or ethnicities (California Department of Education, 2019b). OUSD district staff supported health pathways with work-based learning coordination and provided coaching on how to integrate preparation for health careers into instruction. OUSD also worked with schools to manage their use of Atlantic Philanthropies grant funds.
- **Alameda Health System.** AHS is an integrated public health care system that operates multiple regional hospitals including Highland Hospital, Alameda Hospital, and San Leandro Hospital. AHS supported the development of health pathways by opening its hospitals to local students to participate in internships and other career development programs. AHS runs HealthPATH, a workforce development initiative that prepares youth and young adults for health care careers.
- **Alameda County Health Care Services Agency.** ACHCSA is a public health agency administered by Alameda County that provides health care services through a network of public and private partnerships. ACHCSA administers the County Office of Public Health as well as school-based health centers at a number of Oakland high schools. These centers provide students access to basic health care services as well as onsite work-based learning opportunities.

To guide their work together, the partners developed a project vision early in the initiative planning:

*Oakland students who reflect the diversity of the community will be prepared and inspired to work in the health sector and will obtain jobs that advance health equity.*

In addition to this long-term vision, partners also identified three intermediate-term goals for the project.

- **Partnership:** Institutionalize partnerships between OUSD, AHS, and ACHCSA.
- **Work-based learning:** Increase the quantity and quality of work-based learning experiences and career exposure for OUSD students and particularly youth from underrepresented groups.

- **Health Pathways:** Create new health career pathways in additional schools and enhance existing health pathways by serving more students, particularly youth from underrepresented groups, and increasing pathway quality.

## HEALTH PATHWAYS

OUSD health career pathways use the Linked Learning approach, which organizes education around industry-specific pathways and integrates four pillars—rigorous academics that meet college-ready standards; sequenced, high-quality career and technical education (CTE); work-based learning; and comprehensive support services—to help students graduate from high school ready to pursue meaningful postsecondary opportunities (Linked Learning Alliance, n.d.). OUSD has been implementing Linked Learning since 2010 and has established pathways across 13 industry sectors, including three health career pathways that pre-dated the OHPP (Exhibit 1). Four other health pathways were established as part of the OHPP initiative.

The majority of Linked Learning pathways in OUSD are organized as small learning communities (SLCs) within comprehensive high schools. Pathways begin in 10<sup>th</sup> grade and students select which pathway they would like to attend when they are in 9<sup>th</sup> grade. Historically, all pathways in OUSD were located in traditional high schools. However, two of the new health pathways are located in continuation high schools that serve students aged 16 to 18 who are at risk of not graduating from traditional high school programs.

*Exhibit 1. Oakland Unified School District Health Pathways*

Pathway	Structure	Year Established
<b>Pathways established before OHPP</b>		
Health Academy at Oakland Technical High School	SLC in Comprehensive HS	1984–85
Life Academy	Small School	2001–02
Public Health Academy at Oakland High School	SLC in Comprehensive HS	2011–12
<b>Pathways established during OHPP</b>		
Health and Fitness Pathway at Dewey Academy	Continuation HS	2015–16
Education and Community Health Pathway at Skyline High School	SLC in Comprehensive HS	2016–17 <sup>a</sup>
Community Health Equity Academy at Castlemont High School	SLC in Comprehensive HS	2016–17
Health Pathway at Ruidsdale Newcomer Continuation School	SLC in Continuation HS	2017–18

<sup>a</sup> The Education Pathway at Skyline pre-dates OHPP. A health strand was added to this pathway in 2016-17, and it was renamed the Education and Community Health Pathway.

## Evaluation Activities

In 2014, The Atlantic Philanthropies commissioned SRI Education to conduct a rigorous multi-year evaluation of the OHPP. Between 2014 and 2019, the SRI research team assessed implementation of the OHPP and analyzed the outcomes of students participating in health pathways. The SRI team used a multimethod research design that includes qualitative and quantitative data collection and analysis. The evaluation focuses primarily on the expansion and enhancement of health pathways in OUSD, with a secondary focus on the lessons learned from developing an education-industry partnership to increase students' access to high-quality work-based learning experiences. The following key research questions guided this evaluation:

- To what extent were OUSD, AHS, and ACHCSA successful at developing an education-industry partnership? What factors facilitated or impeded partnership development?
- To what extent was OUSD successful in expanding enrollment in health pathways overall and for young men of color? What factors facilitated or impeded the expansion of health pathways?
- To what extent was OUSD successful in enhancing students' health pathway experience (e.g., increasing access to work-based learning, relevancy of curriculum)? What factors facilitated or impeded the enhancement of health pathways?
- How did participation in health pathways impact high school and early postsecondary outcomes?

To address these research questions, this evaluation report draws on the following sources of data:

- Document review, including review of OHPP partnership meeting minutes and agendas.
- Interviews with key district and school personnel from OUSD and representatives of AHS and ACHCSA each year from 2015 to 2018.<sup>4</sup> We interviewed staff in new health pathways as well as individuals whose participation pre-dated the OHPP initiative.
- Focus groups with 12<sup>th</sup> grade students participating in health career pathways in spring 2017 and 2018.
- Data from a survey of 12<sup>th</sup> grade students in health career pathways in spring 2018. The survey was administered only in the three health pathways that had 12<sup>th</sup> grade students in 2018.
- Data comparing OUSD student demographics and achievement outcomes for students in health pathways with those of their peers in traditional high school programs and other career-themed pathways. We assessed outcomes only for students in the three health pathways that had 12<sup>th</sup> grade students in 2018.

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<sup>4</sup> For the number and types of interviews conducted each year, see Chen, Wei-Bing; Warner, Miya; Park, C.J., Wei, Xin; Tiruke, Tejaswini; Williamson, Cyndi; and Benge, Candice. (2020). *Evaluation of the Oakland Health Pathways Project: Technical Report*. SRI Education: Menlo Park, CA.

- Data comparing National Student Clearinghouse results and initial postsecondary enrollment of students in health pathways and students with those of their peers in traditional high school programs and other career-themed pathways. We assessed outcomes only for students in the three health pathways that had 12<sup>th</sup> grade students in 2018. National Student Clearinghouse data was available for high school completers only.

In addition to the findings presented in this report, Augenblick, Palaich and Associates (APA) analyzed the costs associated with implementing health pathways in OUSD. This study, *Oakland Health Career Pathways: Resource Study*, provides an overview of the resources necessary to implement health career pathways in OUSD at the school and district levels.

## **Report Overview**

In Chapter 2, we provide lessons learned from the partnership between OUSD, AHS, and ACHCSA to increase access to high-quality, authentic work-based learning experiences for health pathway students. In Chapter 3, we document the implementation of OHPP in OUSD, including efforts to expand and enhance health pathways. In Chapter 4, we draw on student survey and focus group data to describe students' experience in health pathways and their perceptions of their college and career readiness. Then, in Chapter 5, we compare high school and early postsecondary outcomes for health pathway students and their peers in traditional high school programs and other career-themed pathways. The final chapter distills the key findings from the OHPP evaluation and describes implications for the field.



## Chapter 2: Partnership

One of the key goals of the OHPP initiative was to establish and institutionalize a partnership between OUSD, AHS, and ACHSCA to provide health pathway students with increased opportunities for high-quality work-based learning experiences. This chapter presents lessons learned from the experience of the OHPP partners on creating and maintaining an education-industry partnership and building authentic work-based learning experiences. These lessons are relevant to individuals and teams in organizations that lead education-industry partnerships, especially those involved in high school health care partnerships that deliver work-based learning.

### Creating and Maintaining an Education-Industry Partnership

A goal of the OHPP was to develop and institutionalize a partnership between the three participating organizations that would be sustained beyond the end of the grant. This type of cross-sector partnership between K–12 education and industry holds great promise for revitalizing career and technical education and improving outcomes for students, but it typically also faces major implementation barriers that all partners must work to overcome to be successful (Shapiro, 1999). Education and industry have different missions, organizational structures, cultures, and operational languages. Partnerships between education and health care organizations can be particularly challenging because both have complex bureaucratic structures and tight regulations to ensure both student and patient safety and privacy. In what follows, we share lessons learned drawn from both the challenges and successes experienced by the OHPP in developing the partnership, including establishing a shared vision, identifying a clear leadership structure, and understanding each other's organizational structures.

#### ***Establish a shared vision that builds on the existing goals and assets of each partner organization.***

In developing a cross-sector partnership, it is critical to begin by establishing a shared vision for the work that can serve as the starting point for the development of more concrete short- and intermediate-term goals. This shared vision can also be a lodestar for partners as they confront the challenges in forging and sustaining their new collaborations.

In developing a shared vision, the OHPP partners capitalized on a preexisting commonality in their organizations' missions. All three organizations shared a commitment to serve disadvantaged youth in Oakland and Alameda County. The partners drew on this commonality to develop their shared vision of improving the educational and employment outcomes of OUSD's low-income students of color by enhancing and expanding health career pathways and work-based learning experiences.

The OHPP partners were also intentional about leveraging programs already in place in each organization that were aligned with this overall vision. OUSD was able to capitalize on existing health career pathways in several high schools as well as a long-term district commitment to the

Linked Learning approach. ACHCSA's Center for Healthy Schools and Community oversaw some of the school-based health centers in OUSD, and the agency's Alameda County Health Pipeline Partnership ran programs aimed at engaging youth and young adults in health careers. AHS's onsite internship program, Health Excellence & Academic Leadership (HEAL), introduced middle and high school students to health care professions through job shadows, skills workshops, seminars, and field trips. By identifying and leveraging these programs, OHPP built on existing partner assets rather than starting from scratch.

This shared vision for both the long-term goals of the partnership and the intended population of participants set the foundation for the work and enabled the partners to retain their focus on helping the most high-need students. Many education-industry partnerships intentionally or unintentionally limit access to work-based learning experiences to higher achieving or more economically advantaged students who have fewer barriers to participation. By orienting their work to improving outcomes for the most disadvantaged students and diversifying the health care profession pipeline so that it better reflects the community, the OHPP partners included students enrolled in alternative schools, summer school, and students with special needs. The partners were prepared to commit resources to reduce the barriers these student populations face in participating in health pathways and work-based learning.

***Identify a clear leadership structure for the partnership, meet regularly, and plan for turnover.***

The OHPP was established as a collaborative partnership with no lead agency, so that each partner would have equal footing and voice in directing the project. This structure meant that none of the partners owned the responsibility of driving the work alone, which could be both an asset and a drawback. The OHPP leadership structure included staff from each organization's leadership level, and the James Irvine Foundation hired an external facilitator to regularly convene the partners.<sup>5</sup> The facilitator handled the logistics of setting agendas and running meetings and supported the development of the logic model. Partners emphasized the importance of having these regular facilitated meetings, particularly early in the process of developing the partnership. The meetings helped them get on the same page, work through challenges, and keep the work of the initiative from falling to the bottom of the busy individuals' priorities. As one lead staff member explained:

[T]he same language means something different in one sector than it does in another. So [it's helpful] just having this commitment to—I guess it's a leadership table—to address where maybe there's some breakdown in implementation. It's almost a no-brainer that we need to have concrete goals and a strategic plan, but where it gets hard and really impactful is where we have an investment together, and so we may try something, but then we need to have the commitment and

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<sup>5</sup> The James Irvine Foundation took on stewardship of the grants for the Oakland Health Pathways Partnership as the Atlantic Philanthropies Foundation was sunsetting. As part of their stewardship, the Irvine Foundation funded an external facilitator.

tenacity to revise it and try again. [We need to understand] there's not a road map, because even within a department it can be difficult, but we all at least speak the same language, centralized. So, I think there's something about a long-term commitment to create a space for collaboration—like a common culture between two different cultures.

The partners valued the facilitator role and continued to fund a new facilitator out of their own grant funds when the foundation sponsorship of the role ended. This second facilitator remained for another year, at which point the partnership leads continued meeting on their own. One lead felt the partnership needed ongoing leadership from a consistent external organization to keep the work moving forward:

One thing that has really surfaced for me is that there needs to be a backbone agency which is independent from the active partners... or someone who can help navigate across the agencies that are doing the work, because there are so many questions that exist, because our meetings went from every other week with some structure to once a month with, like, "What is our agenda this week?" It wasn't that extreme, but it's, like, what can we accomplish within this time, because everyone is already spread so thin, and there's so much preparation that goes into it is the thing [and] that [is] why it would be good to have someone in a position who is dedicated to moving the process forward—not moving the content forward. So, the backbone agency is, I think, essential to a large initiative.

Regular meetings with a consistent group of people across agencies supported the development of relationships and established focused time to work together. However, turnover hindered the group's progress. In particular, turnover among OUSD leaders resulted in a need to renew relationships and orient new participants to the partnership work. In hindsight, new members reflected that they would have benefited from a better orientation to both the overall goals of the partnership and a concrete action plan for how the partners would work together.

Finally, having experienced different configurations of organizational leads at the partnership table, members reflected that it is critical to have representatives who have the authority within their home organizations to make decisions and carry out the work of the partnership.

***Understand each other's organizational structures and engage the appropriate decision makers.***

Establishing an effective education-industry partnership requires taking time for leaders to understand each other's organizational structures and strategize on how best to work within them to accomplish their common goals. Health care and education organizations typically have different processes for decision making, and K–12 school districts themselves vary greatly in the extent to which decision making is centralized at the district versus decentralized to the school. OUSD has a strong history of site-based leadership, meaning that the day-to-day decisions that

affect pathway implementation, including which work-based learning opportunities will be offered and how they will be integrated into the curriculum, occur at the site or pathway level. This decentralized decision making structure was reinforced beginning in 2014, when Oakland residents voted to pass a parcel tax providing additional funding for college and career pathways (Measure N) that specified that 90 percent of the funds would go directly to school sites and that high schools would be responsible for developing customized plans for developing their pathways.

Early in the OHPP partners struggled to make meaningful progress on expanding work-based learning opportunities for OUSD students in some schools and pathways because they were working primarily with central office staff who served as intermediaries between partner organizations and school staff to protect teachers' time. By the end of the initiative, OUSD recognized that the partners needed more direct access to specific school decision makers. For example, the partners had long wanted to offer more school year internships, but district staff had told them that internships would not work within the constraints of the normal school day schedule. Eventually, district staff recognized the need for the partners to meet directly with school decision makers. Once they were able to get the right school and partner organization members together in a room at one school site, the school staff was able to alter the master schedule for the next year to accommodate internships.

OUSD staff also strategized on how to ensure sustainability of the OHPP work given the district's decentralized decision making structure. One approach was to use Atlantic Philanthropies funding to support the initial implementation of a specific program or hire a specific support staff member as a "proof point," with the assumption that if schools found these programs and supports valuable, they would continue to fund them through their site-level budgets after the grant ended. For example, OUSD initially used Atlantic dollars to fund student internship stipends, but by the 2018–19 school year, all pathways were setting aside some site-level funds for the stipends.

It was also important for OUSD to understand the organizational culture and structure of the public health partners. One OUSD staff member reflected:

I think that both sides [schools and partners] need translators. I think the school folks don't understand how totally damaging it is to the hospital to ask multiple doctors to leave their stations. They're volunteering their paid— basically, like, their prep period, the equivalent of a prep period for a teacher—they're volunteering that time to participate in a career exploration visit... and I don't think the school people have enough of an appreciation of what it means if not enough kids come, because they're surrendering their very little time during their very long work day to be present with these [students]. And then on the other side, I don't think the hospital folks don't readily understand the significant logistics and politics around getting 25 students released from various classes, on a bus, and [to] show up professionally

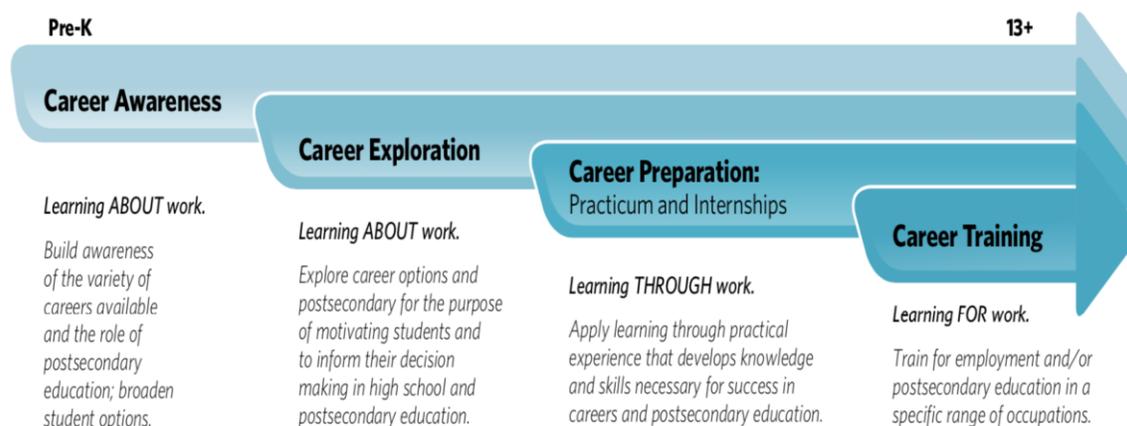
ready. So, I think there's a tendency to overshare or undershare, so there's fatigue from oversharing or lack of empathy from undersharing.

All organizations involved in an education-industry partnership need to take responsibility for both learning about their partners' structures and cultures and orienting their partners to how to most effectively engage with their own organization. In the OHPP partnership, it was also critical that partners kept an open line of communication, enabling them to continue to address barriers and misunderstandings as they arose.

## Working Together to Build Authentic Work-Based Learning Experiences

One of the accomplishments of OHPP has been the greater quality and quantity of work-based learning experiences for students. Work-based learning is an instructional strategy that exposes “students to future options and provide(s) opportunities for skill development and mastery over time,” involves industry or community professionals, and connects to classroom instruction (Linked Learning Alliance, 2012). Work-based learning opportunities span a continuum from career awareness to career training (Exhibit 2).

Exhibit 2. Work-Based Learning Continuum



Source: Work-Based Learning in Linked Learning: Definitions, Outcomes, and Quality Criteria, Field Review Draft. (2012). Linked Learning Alliance. Retrieved from <http://www.temescalassoc.com/db/lias/files/2015/05/WBL-Definitions-Outcomes-Criteria.pdf>

Over the course of the initiative, the partners reported increasing both the number of work-based learning opportunities and the number of students served. In this section, we highlight three lessons learned from the partners' collaborative efforts to expand access to and improve the quality of work-based learning: reducing barriers to participation, supporting students to obtain health clearances, and engaging teachers with industry partners to integrate work-based learning into the school curriculum.

## Reduce barriers to participation and thereby broaden access to work-based learning.

A long-term goal of the OHPP is to diversify the health care workforce by creating a pipeline of diverse future workers. For groups traditionally underrepresented in health care, work-based learning can be an important means for building the workplace skills, networks, and knowledge they need to succeed in such a career. Students from traditionally underrepresented groups, however, may find accessing opportunities more difficult than do their peers with greater financial resources. Participating in intensive work-based learning experiences such as internships may compete with work or family obligations and require reliable transportation—significant barriers for low-income youth.

Through their work with the district, the industry partners began to understand the barriers to students' participation in work-based learning and made efforts to mitigate them to create more equitable access and attract a wider range of students. In the following section we identify some of the promising strategies the OHPP supported in this regard.

- **Stipends.** The Atlantic grants helped support stipends for summer internships and other extended work-based learning opportunities targeted at young men of color and alternative school students. Partners, district staff, and school staff viewed the stipends as critical for attracting the highest need students who otherwise might have taken paying jobs.
- **Shorter work-based learning experiences to pair with summer credit recovery.** Noticing that extended summer internships excluded students who needed to attend summer school, AHS and OUSD collaborated to create a shorter, one-week summer work-based learning opportunity. Lower achieving students are the ones who most need to be reengaged with school, and coupling work-based learning with credit recovery provided an opportunity to do so.
- **Targeted work-based learning for young men of color.** Health pathways have traditionally had more difficulty attracting young men of color, and many health care professions, such as nursing, historically have been female dominated and may not be seen as a viable option by young men.

## Partnering with Alternative High Schools in Work-Based Learning

Industry partners may be reticent to engage alternative schools in work-based learning. Alternative schools can pose challenges to partners due to unique student needs. For instance, many students may enroll in alternative schools for only a short time before returning to traditional schools. Nonetheless, there are good reasons for industry partners to attempt to engage alternative school students, who are often the most in need of meaningful extracurricular experiences to help them stay on track to graduate and enter the workforce.

The OHPP industry partners learned that alternative schools often have greater flexibility to implement creative work-based learning opportunities. An example is the Mentoring in Medicine and Science (MIMS) partnership with Dewey Academy. Because Dewey operates on a six-week hexmester schedule instead of a traditional semester, MIMS created a 12-week program for Dewey's health pathway students. This abbreviated work-based learning program provided greater flexibility for students to gain meaningful hands-on clinical experience with health professionals without making a long-term commitment they might have been unable to fulfill.

Although pathways in OUSD start in grade 10, a Health Scholars Program created as part of OHPP targeted young men of color in grade nine in an effort to build their understanding of and engagement with health care careers. The program intentionally brought male emergency medical technicians of color to work with the students so they could see themselves reflected in the field.

- **Summer internships aligned with district work readiness program.** The partners worked with OUSD to develop new or tailor existing internships to better align with OUSD's summer Exploring Career, College and Community Options (ECCCO) program. As part of ECCCO a supervising teacher supported student success in internships by facilitating weekly group meetings, visiting internship sites, and troubleshooting barriers to participation (such as transportation). ECCCO also provided a work readiness curriculum to better prepare students to understand workplace expectations and develop the interpersonal and self-management skills to succeed at work. Students accessing internships through the district ECCCO program could earn class credit in addition to the stipend.
- **Onsite opportunities.** With transportation expensive for students and pathways and often logistically challenging to arrange, school-based health centers can provide opportunities for work-based learning. Although health privacy concerns can preclude clinical involvement at these centers, other learning experiences are possible. ACHCSA has been working to reframe visits to school-based health centers to expand the focus beyond receiving services to also include information on health care careers. In addition, the development of youth advisory boards at school-based health centers is seen as a way to engage youth and work on skill development through youth-led research using a Youth Participatory Action Research (YPAR) curriculum.

***Support students to obtain the health clearances they need for authentic exposure to medical settings.***

Onsite work-based learning opportunities in health care often require students to meet certain health requirements, such as showing proof of a negative tuberculosis (TB) test or specific immunizations. Obtaining health clearances can be difficult because students may not have access to regular health care. Even students who have regular access to care may have difficulty navigating the process of obtaining clearances because they must understand their insurance, know the types of records or tests they need, find and communicate those needs to their medical office, have the proper forms filled out, and obtain parent permissions.

The partners explored ways to ease barriers to student completion of health clearances as part of their work together. While the partners did not find a universal solution, we highlight three approaches the partners tried: leveraging school-based health centers, helping students navigate the health clearance process, and revisiting requirements.

- **Leveraging onsite health services.** School-based health centers provided an onsite option for some students to obtain health clearances. The partners had initially hoped that school-based health centers could be a systemic solution, whereby all students would obtain the suite of necessary health clearances at the beginning of the school year and then participate in any opportunities that emerged throughout the year. Efforts to leverage school health centers created greater awareness and use of them for health clearances, but did not produce a universal solution. Depending on their health insurance coverage (state Medicare or MediCal, private coverage, or uninsured), not all students could access all the services needed for the clearances (for example, some students were ineligible to receive immunizations through the school clinics). In addition, school-based health centers did not necessarily have the capacity to provide services to clear large groups of students at the same time.
- **Support for navigating the process.** To help students in obtaining health clearances, the OHPP created materials to help them navigate the process and provided hands-on support. The materials explained the various health clearances needed, such as the flu shot, and specific requirements for OHPP-related internships. In addition, district personnel worked with students one-on-one, scheduling group visits to the school-based health centers and following up with students on paperwork. The extra district support removed the burden from the pathway teachers, who did not have the time to navigate this process. While helpful for moving students through the clearance process, such support was labor and staff intensive.
- **Revisiting requirements.** ACHCSA examined its summer internship requirements to identify ways to ease the clearance process for students. Working with its internal legal and human resources departments, ACHCSA determined that students no longer needed background checks or TB tests and that OUSD's school health clearances were sufficient for their onsite internships. This enabled ACHCSA to develop a form to allow the district to sign off on student health clearances.
- **Alternative experiences.** Using the Atlantic grant funding, AHS built a simulation lab to provide hands-on learning for students outside a clinical setting. This has allowed AHS to provide students with career exploration visits without the need for health clearances.

The efforts to lower the barrier of student health clearance did not result in a comprehensive solution for the issue. However, the partners built greater awareness of the health clearance process and school-based health centers as a potential solution and identified additional challenges they needed to address.

***Engage teachers with industry partners to integrate work-based learning into the school curriculum.***

Connecting work-based learning to classroom learning fosters student engagement by reinforcing academic lessons and underscoring their real-world relevance. Integration of work-based learning cannot be done well without the active involvement of the pathway teachers, who can help students prepare for these experiences and connect them to what students are learning in school. Although the OHPP took promising steps to support this integration, building connections between industry partners and teachers proved challenging.

- **Curriculum mapping.** District personnel worked with pathway teachers to map work-based learning opportunities to their curriculum in the first year of OHPP. The intention was to support teachers in developing a scope and sequence of desired activities aligned with the pathway curriculum, and to provide an outline of pathway work-based learning needs to partners. During the next year, the partners were invited to the mapping meeting so they could better understand what types of experiences were needed and at which points in time in order to support more thoughtful advance planning. However, participants did not universally view the curriculum mapping as valuable. Some pathways had existing processes for mapping so the OHPP-led process felt redundant and burdensome; other pathways were at such an early stage of developing their curriculum that the mapping felt premature.
- **Teacher externships.** Externships are useful for increasing pathway teachers' expertise and understanding of the industries aligned with their pathway themes because they provide an opportunity for teachers to learn from industry professionals in their work environment. Recruiting professionals out of a high-demand field such as health care into teaching can be difficult. Teachers may not come into a health pathway with industry experience and if they do, that experience may be dated. To increase teachers' understanding of the health care profession, the OHPP partners offered externships to pathway teachers. Teachers found externships valuable for understanding their students' work-based learning experiences and for informing classroom instruction. At one school, for example, a teacher integrated new information on adolescent health, dating abuse, and STDs/STIs into an educational psychology class, having learned about this content while visiting a psychiatric facility for adolescents and a recovery center for adults. To support the externships, the district provided stipends and required teachers to create lessons based on their summer externships. Despite teachers' initial strong interest, the loss of the externship coordinator reduced the support teachers received in arranging these opportunities and translating their experiences into the curriculum.
- **Professional learning community.** To build a stronger connection between health care career pathways and industry partners, the district convened a health professional learning community (PLC). Full-day meetings provided an opportunity for extended interactions and relationship building between pathway personnel and partners. The agenda for the meetings varied but

always included opportunities for teachers to learn from partners, who served as guest speakers, provided feedback on curricular units, and shared with teachers the types of services they might provide to them. One partner described the meeting's value:

[The PLC] helps me get a better understanding of the curriculum and how the teachers are trying to be intentional about bringing in guest speakers [and] developing curriculum and getting feedback from partners who are in the field on what they're teaching. That is one part of the [PLC's] design. The other part has been just getting a sense of what teachers are doing and what health issues they're focusing on throughout the year and how to connect them with other health professionals that could be part of that, either [by] hosting a tour, hosting a visit, or just by having a guest speaker come in.

However, the PLCs had challenges with health pathway teachers' attendance. Not all teachers were able to find coverage to attend a full-day meeting offsite, which diminished the value of networking and reach of the PLC opportunity.

## **Conclusion**

The OHPP represents an ambitious effort to forge a lasting partnership between OUSD and the region's public health sector. Both sectors are highly regulated to ensure safety and protect privacy, and they have very different organizational structures and cultures, creating barriers to collaboration that slowed the progress of the initiative. Nevertheless, this collaboration was necessary to grow work-based learning opportunities for students. The partners' experiences working through these barriers to allow collaboration and expand work-based learning offer lessons that may benefit those undertaking future similar efforts.

Establishing effective partnerships takes time and dedication. Even with a shared core value as fundamental as reaching underserved students, partners need to develop shared language and learn how to effectively interact with one another. Determining who needs to be at the table from each organization is an important first step, and documenting decisions as well as codifying a concrete action plan for how the partnership will operate is crucial to avoid losing momentum due to staff turnover.

Despite these challenges, the OHPP partners capitalized on their shared commitment to implement innovative approaches and increase access to work-based learning opportunities for disadvantaged students in health care fields. These efforts included reducing the financial and logistical barriers to participation and targeting recruitment to young men of color.

## Chapter 3: Pathway expansion and enhancement

In support of OHPP's long-term goal to diversify the local pipeline of health professionals, the initiative aimed to increase and diversify OUSD's health pathway enrollment and enhance the quality of students' experiences in health pathways. This chapter describes aspects of the district context relevant for understanding how OHPP implementation unfolded in OUSD, and then details the OHPP's progress toward health pathway expansion (increasing the numbers of students in health pathways) and enhancement (building new high-quality health pathways and improving existing health pathways).

### District Context

OUSD built on the district's history of implementing career-themed pathways using the Linked Learning approach to expand and enhance health pathways. As noted earlier, three of the health pathways pre-dated OHPP. OUSD's earlier pathway development benefited from their participation in the California Linked Learning District Initiative from 2010 to 2014, which was funded by The James Irvine Foundation<sup>6</sup> and included both grant awards and technical assistance aimed at supporting the development of a district system of pathways.

Developing new health pathways for OHPP also aligned with the district's strategic plan goal of enrolling 100 percent of all rising sophomores in Linked Learning pathways by 2020 (Oakland Unified School District, 2014), and it coincided with the passage of a parcel tax in 2014 providing additional funding for college and career pathways (Measure N). OUSD also benefited from two smaller state California Career Pathways Trust grants in 2014 to support regional collaboration around pathways, and California Technical Education Incentive Grants. In addition, three of the health pathways located in comprehensive high schools receive annual California Partnership Academy grants, aimed at supporting career themed academies.

Even before the OHPP was established, OUSD had district-level staff with time dedicated to supporting pathways across the district, including a Linked Learning Director to oversee all career pathways in the district. To augment existing supports, OUSD funded district and school-level positions by using the Atlantic grant specifically to support health pathways.

The district re-configured the district-level roles a few times during the course of the grant due in part to turnover, however internal capacity for managing the work was inadequate at times. Between the start of the grant in 2014 and the end of the grant in October 2019, four different staff members led the OHPP work. The lack of continuity in district leadership for the grant increased the burden on school-level pathway staff who, at times, found it difficult to access the resources they need to support their work, as one staff member shared:

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<sup>6</sup> Between 2010 and 2015, The James Irvine Foundation awarded \$19.2 million to ConnectEd—and intermediary organization that provided technical assistance and sub-grants to nine districts including OUSD, as part of the Linked Learning District Initiative.

One hindrance has been the changeover in the Linked Learning office... There's been a lot of turnover and therefore, I don't know who to go to for... pots of money that exists there. It's getting a little better, but there was a time at the beginning of this school year where I had to really send a bunch of emails and ask a bunch of questions and say, "Who is overseeing my Atlantic grant money? Because I'm trying to buy stuff." So that's been hard but it's getting better. I think it's finally a little bit clearer and I did recently put in an order for some new science stuff and I think it's going through. So that's good...

However, one district leader did not believe district turnover had a significant impact on the development of health pathways—citing the work had been intentionally shifted to the site level or nested within existing district efforts to expand pathways.

A key component of the district's strategy was staffing support for pathway and curriculum development and for building work-based learning connections. The structure of the support shifted over time, but there was always a district-level work-based learning coordinator dedicated to connecting pathways with health industry partners, as well as staff focused on providing coaching on new pathway development. At the start of the Atlantic work, the district placed coaches at each of the comprehensive high schools with a health pathway to support pathway development. The coaching role was viewed as critical to guiding pathway development but often became subsumed by administrative tasks. In the latter years of the initiative, OUSD created a district-level position focused exclusively on supporting CTE course and curriculum development for health pathways. A district leader described the importance of the coaching role:

Most important thing we have invested in is pathway coaching... Teachers get so busy with day-to-day teaching, that if you don't have someone on site that is really explicitly owning pathway development... building the capacity of that team to share work, think about students, if you don't have someone owning it, it doesn't happen. You're lucky if you happen to have a pathway lead step into that role and there are few people with that level of capacity and time to do it. You need someone keeping the pathway feet to fire, looking at [school plan]... The coach continually puts that work in front of them, is it working? If not let's do something else.

OUSD's history of implementing career-themed pathways, coupled with alignment to district goals and local funding, provided the district with expertise and infrastructure when developing new health pathways. To manage the work and support schools, the district allocated funding to support district and school level staff; however, turnover and competing demands slowed progress. In the remainder of this chapter, we describe OUSD's accomplishments on the two goals of expanding and enhancing health pathways in the district.

## Pathway Expansion

OHPP had two goals for pathway expansion: (1) increasing the number of students served by health pathways, and (2) increasing access for underrepresented minorities and, in particular, young men of color. To increase the number of students served by health pathways, the district could either increase enrollment in existing pathways or create new pathways. Before the OHPP was implemented, OUSD had three established health pathways:

- LIFE Academy of Health and Biosciences
- Health Academy at Oakland Technical High School
- Public Health Academy at Oakland High School

OUSD developed four new pathways over the course of the initiative:

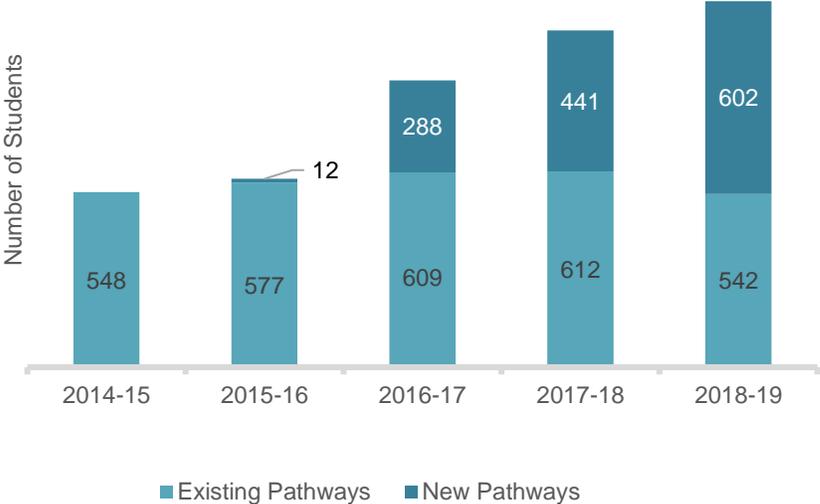
- Health and Fitness Academy at Dewey Continuation High School
- Public Health strand within the Education Leadership Academy at Skyline High School
- Community and Health Equity Pathway at Castlemont High School
- Health Pathway at Ruidsdale Newcomer Continuation School

Two of the new pathways were located at comprehensive high schools, and two were located at continuation high schools. In California, a continuation high school is an alternative school, designed to accommodate students at risk of not graduating because of credit deficiencies, need to work, or other family needs and circumstances that require a more flexible schedule. At one of the comprehensive high schools, a public health strand was added to an existing Education Leadership Academy. By 2018–19, of the 17 district-run schools serving high school students, about 40 percent of high schools in Oakland had a health pathway (Oakland Unified School District, 2018).

***The number of students in OUSD health pathways doubled from 2014–15 to 2018–19, driven by the introduction of four new pathways.***

OUSD increased health pathway enrollment from 548 in 2014–15 to 1,144 in 2018–19 (Exhibit 3). Most of the expansion came through enrollment in new health pathways rather than growing enrollment in existing pathways. At two established pathways, staff explicitly stated that growing enrollment was not part of their plan and cited a desire to keep the small community feel of their pathways.

Exhibit 3. Oakland Unified School District Health Pathways: Existing vs. New



<sup>b</sup> Schmidke, K. (2019). Oakland Unified School District: Pathway Demographics. Retrieved from: [https://dashboards.ousd.org/views/PathwayEnrollment\\_1/PathwayDemographics?%3Aembed=y&%3Adisplay\\_count=no&%3Arender=false#54](https://dashboards.ousd.org/views/PathwayEnrollment_1/PathwayDemographics?%3Aembed=y&%3Adisplay_count=no&%3Arender=false#54)

***The number of students from underrepresented groups in health pathways increased from 2014–15 to 2018–19.***

A goal of the OHPP was to help build a pipeline of young people interested in health professions that reflected the demographics of the community. As health pathway enrollment grew, the overall numbers of low-income, minority, and male students in health pathways increased. Overall, the number of low-income students (as measured by free and reduced-priced lunch) grew from 388 in 2014–15 to 899 in 2018–19. Enrollment of African-American male students in health pathways increased from 46 in 2014–15 to 169 in 2018–19. In addition to the overall numbers of students from underrepresented groups increasing, pathways increased the proportion of some underrepresented groups enrolled in health pathways. In particular, the gender balance within health pathways increased steadily over time from about 37 percent male in 2014–15 to about 49 percent male in 2018–19 (Exhibit 4). Smaller overall increases in the proportion of students eligible for free or reduced-priced meals and in the number of participating African-American males.

Exhibit 4. Percent of OUSD Students in Health Pathways by Demographic Subgroup by Year

Variable	School Year				
	2014–15	2015–16	2016–17	2017–18	2018–19
<i>Student Demographics</i>	Percent	Percent	Percent	Percent	Percent
<b>Free or reduced-priced meals eligibility<sup>7</sup></b>					
Received free or reduced-priced meals	72	73	75	82	79
Did not receive free or reduced-priced meals	29	27	25	18	21
<b>Gender</b>					
Male	37	39	46	49	49
Female	63	62	54	52	51
<b>Race<sup>8</sup></b>					
African American	31	24	28	29	34
Asian	14	17	16	14	14
Latino	44	46	47	51	46
Multiple	0	0	2	1	1
Pacific Islander	0	0	0	0	1
White	11	12	7	5	5
<b>Race and gender<sup>9</sup></b>					
African American male	35	26	31	33	40
Latino male	65	74	70	67	60

<sup>6</sup> Schmidke, K. (2019). Oakland Unified School District: Pathway Demographics. Retrieved from: [https://dashboards.ousd.org/views/PathwayEnrollment\\_1/PathwayDemographics?%3Aembed=y&%3Adisplay\\_count=no&%3Arender=false#54](https://dashboards.ousd.org/views/PathwayEnrollment_1/PathwayDemographics?%3Aembed=y&%3Adisplay_count=no&%3Arender=false#54). Data for pathways is available as students were enrolled into pathways, except for Dewey Academy in 2015–16, which only had 12 students enrolled in Health and Fitness pathway that year.

<sup>7</sup> Data missing on free or reduced-priced meal eligibility status. Between 0.67% and 3.9% of students enrolled in pathways are not represented in this count across all school years.

<sup>8</sup> Data missing on race. Between 6.47% and 11.89% of students enrolled in pathways are not represented in this count across all school years.

<sup>9</sup> Data missing on race and gender for all schools across all school years.

Most growth resulted from increases in pathway numbers came from new pathways located at schools with higher proportions of low-income, African-American, Latinx, and male students overall (Exhibit 5). The development of pathways at these schools likely helped diversify the types of students in health pathways overall.

*Exhibit 5. Percentage of OUSD Students by Demographic Subgroup in 2018–19*

<i>Variable</i>	<i>African-American</i>	<i>Hispanic or Latino</i>	<i>Free or Reduce Priced Lunch Eligible</i>	<i>Male</i>
<i>School</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
<b>Schools hosting pathways that pre-date OHPP</b>				
Life Academy	7	84	91	51
Oakland High School	24	36	87	53
Oakland Technical High School	27	17	48	51
<b>Schools hosting new pathways</b>				
Castlemont High School	27	67	91	57
Dewey Academy	52	36	87	60
Rudsdale Continuation School	19	77	89	62
Skyline High School	32	37	73	51

<sup>b</sup> California Department of Education: Student Poverty FRPM Data. (2019). Retrieved from: <https://www.cde.ca.gov/ds/sd/sd/files/sp.asp>; Oakland Unified School District: Enrollment Snapshot. (n.d.). Retrieved from: [https://dashboards.ousd.org/views/Enrollment/Snapshot?embed=y&:showShareOptions=true&:display\\_count=no&:showVizHome=no&:render=false#7](https://dashboards.ousd.org/views/Enrollment/Snapshot?embed=y&:showShareOptions=true&:display_count=no&:showVizHome=no&:render=false#7)

***Two established pathways modified recruitment to create pathway enrollments reflective of school demographics.***

In the two established health pathways at comprehensive high schools, staff sought to create pathway enrollments more reflective of their overall school demographics. One high school devised a blind system for student placement to make the pathways more equal by gender, ethnicity, grade point average (GPA), and disability by using student identification number and demographic data to enroll students. Most students placed into their first or second pathway choice. At a second school, the health pathway modified their recruitment materials and prioritized enrollment of young men A staff member described this strategy as follows:

And so what we did is we did several things, our promotional materials... for the education [and community health] academy, we used pictures of the young men... during the freshmen recruitment days... we had them be the lead recruiters for the freshmen... there's more students who request these two pathways than there are spaces available, and so what we did is we prioritized... If you're a young man and you request [the health pathway], you automatically get into that pathway. So we basically prioritized the underrepresented groups when bringing students into that pathway, and that's been pretty successful.

One also encouraged more male students to participate by offering college emergency medical technician (EMT) courses and partnering with a community organization that supported youth to train to be EMTs. Staff at both pathways viewed their efforts as successful at diversifying their pathways.

At the third established pathway, a small health themed school starting with grade 6, staff noted their student population became less diverse as students entered high school, with many students choosing to transfer out. The choice to attend the middle school was often linked to parents' decisions rather than student interest—which may, in part, explain why some students transfer out. Staff described efforts to increase parent involvement and keep or attract African American students but noted it was an ongoing challenge.

## **Pathway Enhancement**

Developing the quality of new health pathways and leveraging industry partnerships to expand work-based learning for all pathways were the primary ways the OHPP worked to enhance students' health pathway experiences. Chapter 2 described the ways the partnership worked to improve work-based learning experiences for students. In this section, we detail the development of new health pathways and additional ways (other than work-based learning) that grant funding.

### ***New pathways focused on developing themes, course content, and projects relevant to their unique student populations.***

The field of health care is broad. As schools developed new pathways, the specific thematic focus of each new pathway was determined by school staff who considered student interest and need. As one staff member at a new pathway noted, the pathway's specific health focus grew out of student interest in an existing class: "We didn't just stick with health and fitness because we already had it—the kids really validated... [the] work." At another site, rather than follow traditional high school biology and chemistry sequences, pathway teachers focused on the underpinnings of social determinants of health, such as stress caused by adverse childhood experiences, lack of medical care, and exposure to drugs and environmental toxins. The staff aimed to create a highly relevant, engaging curriculum to address school attendance issues. At the third pathway site, a community health strand was created in the education pathway to

attract students (particularly males) who might be interested in coaching athletics or studying kinesiology. Staff at this pathway noted adding this strand resulted in a more even gender balance.

In addition to strategically selecting pathway themes, staff at new health pathways focused on developing integrated academic and CTE courses with the support of a district-level health pathway coach. Integrating career technical content and rigorous academic content is a key feature of Linked Learning pathways and helps students see how core academic content can be relevant and provides a real-world application for academic skills. Two of the new pathways worked on the development of cross-curricular projects. At one new pathway, a teacher described this successful cross-curricular project and the positive impact it had on the students:

They did a cross-curricular project. Each group had a central question that they had to answer. ... They were all student researchers. ... They talked to families at [Alameda County Public Health Department—Women, Infants, and Children (WIC)]; Head Start; the wellness center. [They] did a survey of stores in the area: Are books available? [At what] prices? Through math, they analyzed the data, made infographics, [and] did research in science classes. ... In history they did research on social services: Does WIC work? Does section 8 work? Then they presented findings to the public. ... The project was a huge success, not just because of the work they did, [but also because] they owned it.

Another new pathway used a common framework—the Eight Dimensions of Wellness—across all classes to integrate the theme. One teacher described the shift to a schoolwide approach:

As a teacher who is in his second year at the school, I've seen this completely expand to become schoolwide. I'm a science teacher, and the dimensions of wellness now are in my class. I've utilized those dimensions in my "Do Now" in class. Students journal their work. It's across the school, students are thinking about it all the time, they are thinking in that language—social, occupational, nutrition, physical wellness.

***Students at both new and existing health pathways benefited from increased access to work-based learning experiences; and pathway staff leveraged the Atlantic resources to advance specific pathway needs.***

As detailed in Chapter 2, a core focus of OHPP was the development of work-based learning opportunities for students. Both new and existing pathways were enhanced by increased access to high-quality work-based learning experiences in the health care field. In addition, health pathway staff leveraged grant money to advance the specific needs of students at their pathway site. The use of funds varied based on the pathway's stage of development, staff, and student populations. At the new pathways, staff reported using Atlantic funds to cover start-up costs, such as a lab and teacher professional development, collaboration time to develop curriculum,

curriculum materials, and equipment including CPR equipment. The established pathways used funds in a variety of ways, including investments in equipment, professional development, and other purchases. Two established pathways reported purchasing equipment, such as Chromebooks, printers, and furniture for lab activities. A lead teacher at one of these pathways thought an investment in durable goods to be the best use of one-time funding and explained that new equipment showed an investment in the students and increased their pride. Established pathways also reported using funds to support student afterschool activities, including: internship stipends, field trips, and afterschool programming with one of the Atlantic partners; collaboration time to build curriculum and examine data; professional development; case management services for students; and an app to track students at internships.

## **Conclusion**

OUSD succeeded in doubling the numbers of students enrolled in health pathways and increasing the numbers of low-income and underrepresented youth enrolled, primarily through the development and strategic location of new health pathways. In their development of new pathways, staff tailored the particular health focus to the needs and interests of their students and leveraged grant funds to best meet the varied needs of their pathways.



## Chapter 4: Student experience

### Introduction

The OHPP and Linked Learning initiatives are informed by new understandings of what learning means and what conditions are necessary for learning to occur. The dominant model of learning in the 20<sup>th</sup> century was a ‘factory model’ in which students were viewed as a product in the making, being pushed down an assembly line and molded by the hands of experienced professionals (Tyack & Cuban, 2001). Advances in neuroscience provide strong evidence against this model and suggest students must be actively engaged for learning to take place (Hinton et al., 2012). This has led to skepticism about learning systems built on impersonal lectures and rote memorization and spurred the development of multiple student-centered approaches, including positive-youth development, competency-based education, project-based learning, and work-based learning. A focus on student experience is central to the movement.

The Linked Learning model is a part of this movement and uses one of the student-centered approaches, work-based learning, alongside three other pillars (rigorous academics that meet college-ready standards; sequenced, high-quality career and technical education, and comprehensive support services) to help students graduate from high school ready to pursue meaningful postsecondary opportunities. In the preceding chapter (Chapter 3) we described the history of Linked Learning in OUSD as well as the efforts to build new health pathways that followed the Linked Learning approach. In this chapter, we look at how these efforts translated into the lived experiences of the students at the center of this work. We draw on focus groups and a survey of 12<sup>th</sup> grade students in health pathways to describe student perceptions of the work-based learning experiences they engaged in and their self-assessment of their readiness for life after high school.<sup>10</sup>

### Accessibility, Quality, and Integration of Work-Based Learning Experiences

As described earlier in Chapter 2, the Work-Based Learning Continuum (Exhibit 2) suggests secondary students should have career training and preparation activities built into their educational experiences. The Linked Learning model defines these concepts as applying “learning through practical experience” and training “for employment and/or postsecondary education in a specific range of occupations” (Linked Learning, n.d.). Pathway student feedback points to overall positive experiences with the opportunities for work-based learning, but the integration of those experiences into classroom curriculum could be improved.

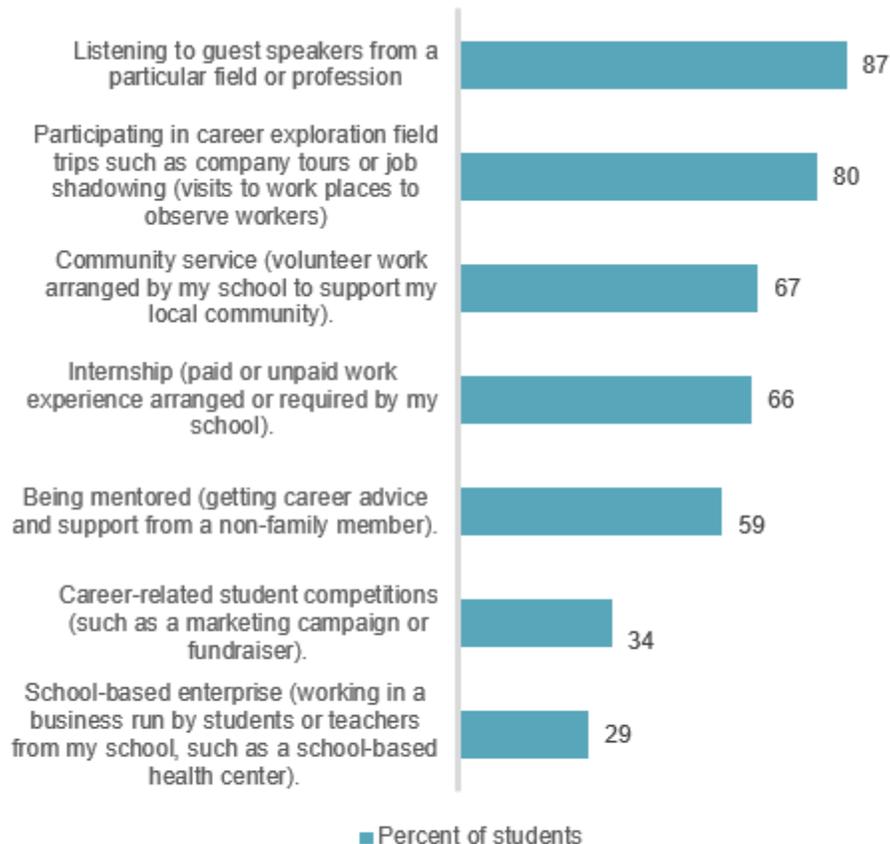
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<sup>10</sup> We gathered student experience data through a voluntary, anonymous online survey of 137 seniors in the three established health pathways that had students graduating in spring 2018. At the time of the survey, the three new health pathways did not have graduating seniors. To support these survey data, we use information from student focus groups conducted with graduating seniors from two established health pathways in spring 2017 and all three established health pathways in spring 2018, for a total of five student focus groups. We provide additional context using data from 55 interviews with staff and teachers representing the district and all six health pathways conducted over three years (2015–18). For more details on survey methods see the Technical Report<sup>4</sup>.

### Pathway students participated in a range of work-based learning experiences.

OUSD health pathways offered students the opportunity to participate in a range of work-based learning experiences, from lighter touch encounters, such as guest speakers, to more intensive summer internships. In the three established health pathways included in the student survey, almost all students took advantage of these opportunities: 97 percent of grade 12 health pathway students reported they had participated in at least one form of work-based learning that their school arranged or required. The most commonly reported work-based learning experience was listening to guest speakers from a health field or profession (87 percent), followed by participating in career exploration field trips (80 percent). Two-thirds (66 percent) of students reported participating in internships, and over half (59 percent) reported receiving some sort of professional mentorship or career advice from a non-family member (Exhibit 6).

Exhibit 6. Participation in work-based learning experiences, n = 137



For context, these levels of work-based learning participation are substantially higher than those reported on a similar survey of 12<sup>th</sup> graders conducted in 2014 in the nine California school districts participating in the Linked Learning District Initiative (Guha et al., 2014). That survey, which included both students participating in Linked Learning pathways and a comparison sample of students in traditional high school programs, reported the following work-based learning participation rates: guest speakers (74 percent of Linked Learning students, 64 percent of comparison students); career exploration field trips (44 percent Linked Learning; 27 percent comparison); internships (34 percent Linked Learning, 18 percent comparison); and being mentored (44 percent Linked Learning, 34 percent comparison).

***Barriers to student participation were mitigated but not eliminated.***

As described in the previous chapter, pathway staff made efforts to reduce barriers to student participation in work-based learning experiences. Despite this effort, several barriers continued to prevent students from participating. Students and staff members reported the selective nature of some internships, which includes competitive application processes for a limited number of slots, was a barrier. Indeed, the survey respondents who indicated they did not participate in an internship (approximately one-third of the entire sample) cited reasons of limited space (36 percent), GPA and coursework requirements (19 and 13 percent, respectively), and difficulty completing all of the required paperwork and permissions (13 percent). A work-based learning liaison described his frustration with application processes he believed were prohibitive to students with lower literacy:

The application process is a barrier, [because at our school] we have a third-grade literacy level. So, it's not accessible. We have [migrant students] who are in the process of learning English. And that application essay might be inaccessible or impossible for them, particularly given that they're competing across the district. So, when programs are competitive and districtwide and you're denying people without even interviewing them, you're not really seeing what they could contribute. ... I want [those programs] to meet with students who are struggling and still developing their passions.

In response to some of these challenges, some pathway staff helped students with internship applications by requiring that they write their resumes and mock cover letters during CTE classes. Other school staff, such as work-based learning liaisons, spent considerable time helping individual students complete the paperwork and other components of internship applications.

Although pathway teachers and work-based learning liaisons helped students complete their internship applications, survey responses suggested that some students would benefit from additional support to learn about and pursue work-based learning opportunities. Of the grade 12

pathway students who indicated they did not participate in internships, 34 percent reported it was because they did not know how to get involved.

Many health career internships, particularly in clinical settings, also require students to complete health clearances, such as submitting a recent TB test record and having up-to-date vaccinations. Many pathways relied on school-based health centers to support students in obtaining health clearances.<sup>11</sup> Pathway staff members indicated that this requirement was a major logistical challenge for many students. On the survey, however, only 9 percent of students who did not participate in internships indicated it was because of difficulty in completing the health clearance form, suggesting that students did not view health clearances as a primary obstacle, despite the logistical challenges they may have posed for pathway staff.

Students also faced personal barriers to participating in work-based learning, such as family responsibilities, socioeconomic barriers, lack of reliable transportation to the internship site, or not having appropriate professional attire. Of the surveyed students who had not participated in an internship, 32 percent reported that they had to watch younger family members at home, 19 percent indicated the location was hard to get to, and 17 percent indicated the internship required professional dress and they could not or did not want to buy new clothes.

The work-based learning liaison at one school with an impoverished student population believed internship providers were not fully aware of the challenges students faced just to arrive on time:

I want to tell community partners—you're asking for students to get there at 9 a.m. for a summer internship? For our students ... they have to leave home at 7:30 a.m. I mean, walk around the community at 7:30. The harsh reality is that people are still stumbling around doped up. So, when the program penalizes students for being 30 minutes late, they don't know what the student went through [to get there].

Some students could not afford to participate in internships that were unpaid or paid less than they would earn working elsewhere. On the survey, nearly half (42 percent) of those students who did not participate in internships indicated it was because they had a paying job that conflicted with the internship. Pathway staff at all schools acknowledged that high school students have other priorities competing with work-based learning, not the least of which is making money. A pathway teacher at the district's alternative high school said, "My students need to make money, and [most internships] only offer a certain amount of money, which is less than minimum wage. So most of my students that are eligible for an internship, they can't afford to do it."

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<sup>11</sup> School-Based Health Centers (SBHCs) are onsite programs available at a number of health pathway schools in Oakland. SBHCs are operated by licensed Federally Qualified Health Centers in partnership with the school, district, county, and other providers to improve students' overall health. They offer access to health care services and, at some schools, onsite work-based learning opportunities.

At another school, a work-based learning coordinator described the significance of using Atlantic funds to create paid internships for low-income students:

The students got stipends. They got paid from that. And I think that's really important for our students. Because we do have students that are willing to do internship opportunities just for the experience. But there's very few because some of our students have to help support their families. And a lot of times, students want internships, but they want a job because a job gives them more money to be able to help.

In focus groups and survey responses, students who did not apply for internships sometimes explained that, in the words of one focus group participant, "There wasn't anything interesting." Among the 34 percent of survey respondents who reported not participating in an internship, two-thirds indicated that it was because they were not interested. These responses may indicate a mismatch between the types of experiences available and some students' career interests.

***Students report mostly positive feelings about CTE coursework and work-based learning experiences, but the connection between the two could be made more explicit.***

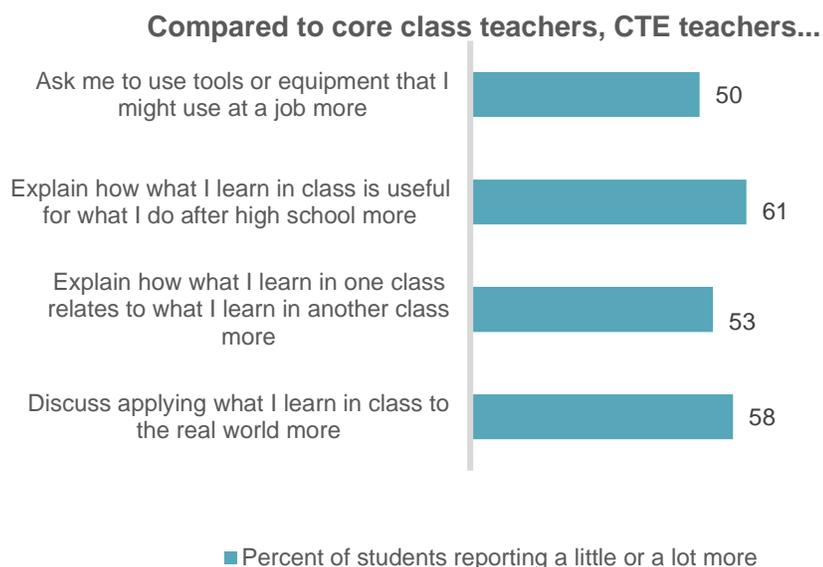
The work-based learning model requires a two-way synergy between academic coursework and work-based experiences. This means coursework should help prepare students for work-based experiences, *and* the work-based experiences should be aligned with and contextualize the coursework. This alignment requires strong school/employer partnerships and presented a hurdle to some pathway programs.

Survey responses suggest that, independently, CTE coursework and work-based learning experiences were largely successful from the student perspective. Pathway teachers did prepare students for their work-based learning experiences. Of students who indicated they had participated in a career exploration field trip, 73 percent agreed or strongly agreed that people at their school helped them prepare for the experience, and 85 percent responded that their teacher(s) made it clear what they expected students to learn from the field trip (Exhibit 7). Similarly, of students who participated in an internship, 73 percent reported that the school staff helped them prepare for it, and 72 percent reported that their teachers set clear learning expectations for their internship. One way that pathway staff at several schools helped students prepare for these experiences was by using lessons and instructional resources from the Exploring College, Career and Community Options (ECCCO) curriculum.<sup>12</sup>

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<sup>12</sup> The ConnectEd ECCCO curriculum provides sequenced lessons and activities to prepare high school students for college and career. The curriculum emphasizes college readiness, career development and exploration, and internships. Retrieved from <https://www.connectedstudios.org/ecco>

Exhibit 7. Student perceptions of CTE/elective teacher actions, n = 137



Likewise, students enjoyed their work-based learning experiences. Of students who reported participating in career exploration field trips or internships, more than three-quarters indicated they were satisfied with their experiences (76 percent and 81 percent, respectively). Students indicated that their internship providers also set clear roles and responsibilities, with 87 percent of internship participants reporting that their employers made it clear what was expected of them on the job. About half of internship participants indicated that they “often” were assigned meaningful tasks to do during their internship (47 percent) or received feedback on their job performance from the adults at their internship (50 percent), while 38 percent of internship participants said these things happened “sometimes.”

Student focus group data provides additional evidence that, independently, the CTE courses and work-based learning opportunities were positive experiences. One student enthusiastically described how “awesome” it was to learn about how the brain and body work in their Anatomy and Physiology course. Another student appreciated the hands-on activities, such as dissecting a cow’s eyeballs, in the same course. However, only one student mentioned an instance of a direct connection between course work and work-based learning; and it was unclear if this connection was intentional or happenstance.

Survey data also suggests that pathways may have room to improve in helping students reflect on and learn from their internships by integrating the experiences into their academic lessons and coursework. Less than a quarter of internship participants indicated that they “often” tied their internship experience back to their schoolwork (22 percent) or discussed in class what they learned from their internship (23 percent). These responses suggest that while both the course

work and work-based learning experiences are positive, the connection between these two components is not made explicit and thus the full benefits of this model may not be realized.

## **College and Career Readiness**

One of the central goals of OHPP is to increase college and career readiness by utilizing the Linked Learning framework. Making informed decisions about what career to pursue and how to gain qualifications towards a career is a critical part of postsecondary success because it allows students to move more efficiently and economically through any required postsecondary education and training. By exposing students to career pathways in secondary school we allow young people to connect their current work to their future success, imagine new opportunities, and understand what kind of training and education is necessary to pursue those opportunities. Whether that career path requires additional education or technical training, a student should be more likely to make strategic decisions about how to pursue a career and feel more confident in their ability to succeed after graduation. Pathway student feedback points to a number of practical and social-emotional outcomes that indicate that OHPP has had some success in achieving their college and career readiness goals.

### ***Students reported increased clarity around career choices and interests.***

Focus groups students fell into one of a few categories when assessing the ways their health pathway experience influenced their career interests; they either:

- knew they wanted to pursue a career in health prior to joining a health pathway and have continued that pursuit, or
- they wanted to pursue a career in health prior to joining a health pathway and have since changed their mind, or
- they were unsure of what career they would pursue prior to joining the health pathway and have since chosen to pursue a health career, or
- they were unsure of what career they would pursue prior to joining the health pathway and have since chosen not to pursue a health career.

Students from all four groups demonstrate a similar increase in clarity around career choices and interests. For example, students in the group that were pursuing a career in health prior to joining a pathway report having a more nuanced understanding of the array of career opportunities available and the education and training necessary to pursue it. For some this new understanding narrowed their interests to a specific kind of health occupation, such as one student who knew they wanted to be in medicine but through their internship learned they wanted to work specifically with critically injured patients. For other students in this group, exposure to real health career settings sparked a new interest in other fields; for example, after working with high-need populations at the local hospital one student shifted from wanting to be an anesthesiologist (because they “make tons of money”) to considering a career as a social worker.

Of the students who were unsure of their career path prior to participating in the health pathway, both those who are pursuing health careers and those who are not found value in their experience. One student reported enjoying “learning about the body” so much that they were now pursuing postsecondary education to become a physical therapist. Another student who had been interested in a health career was grateful that his internship revealed that it wasn’t the right fit as this “really helped [him] decide.” Another student said that her pathway experience “opened [her] eyes to what doctors go through” and helped her realize she would rather pursue cosmetology. Still, she added, “You can have a good experience [in a health pathway] even if you don’t want a health career.”

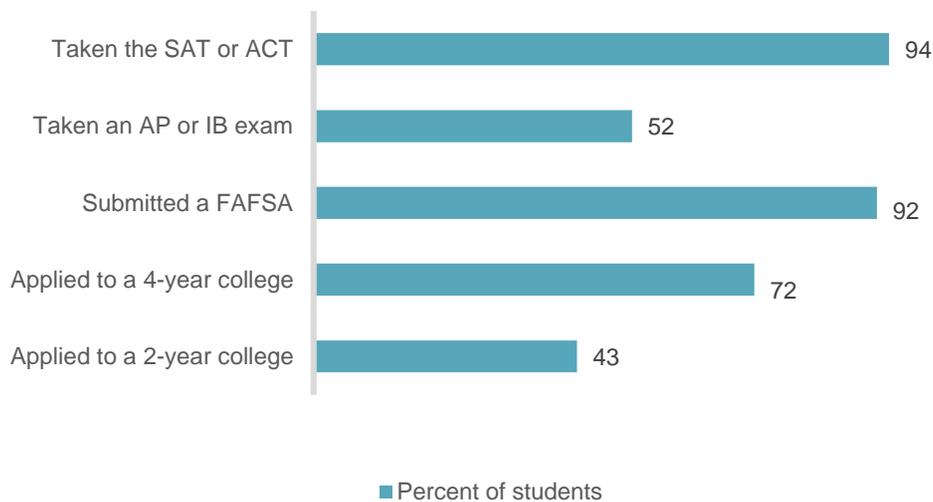
Survey responses back up the narrative provided by the focus groups. Among student respondents, three-quarters (74 percent) said that they knew what job or career they wanted to have in the future, and of these students almost all (92 percent) knew the level of education this future job or career required. Seventy-nine percent of students who participated in career exploration field trips indicated that these experiences helped them better understand a field or profession. One grade 12 student expressed it in the following way:

If you come in not knowing what you want to be, by the time you’re done you will have a sense of what you like versus what you don’t.

***Students and staff saw increased postsecondary education planning and preparation.***

Many students in the health pathways aspired to attend college. The grade 12 students in well-established pathways who responded to the survey reported they had taken numerous steps to prepare for college. By May of their senior year, 92 percent had submitted a Free Application for Federal Student Aid (FAFSA), compared to 73 percent of OUSD 12<sup>th</sup> grade students and 58 percent of California 12<sup>th</sup> grade students in 2018 (California Student Aid Commission, n.d.).

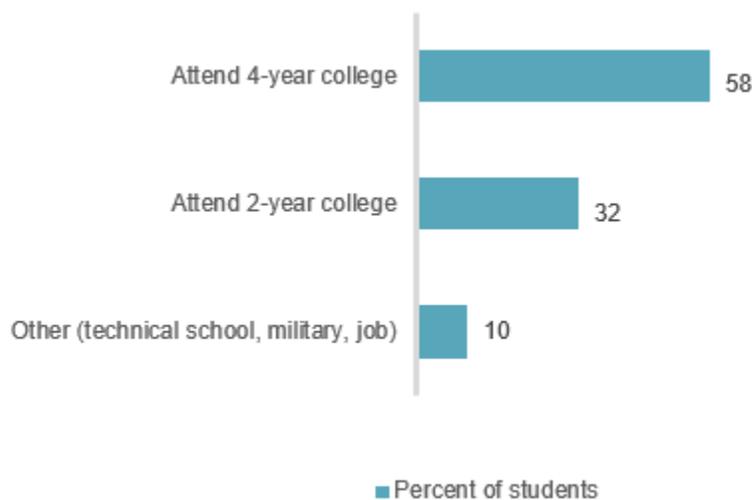
*Exhibit 8. Steps taken to prepare for college, n = 137*



Moreover, almost all had taken the SAT or ACT exam (94 percent), and half (52 percent) had already taken or planned to take an Advanced Placement (AP) or International Baccalaureate (IB) exam. Nearly three-quarters (72 percent) had applied to a four-year college, and two-fifths (42 percent) had applied to a two-year college (Exhibit 8).

Three-fifths (58 percent) of the survey respondents reported they planned to attend a four-year college in the fall after graduating from high school, whereas one-third (32 percent) planned to attend a two-year college. Example postgraduation plans of student focus group participants from across the three well-established pathways included attending the University of California at Davis cosmetology school, the nursing program at Cal State East Bay, and the physical therapy program at the University of the Pacific. The remaining 10 percent of students had other plans, including attending a technical or trade school, enlisting in the military, or getting a job (Exhibit 9).

*Exhibit 9. Plans after high school, n = 137*



Moreover, many student focus group participants felt that their health pathway experiences contributed to their preparation for college. Teachers in one health pathway explained that their students were well prepared to meet “a-g” requirements for enrollment in California’s public universities because they take numerous science classes as part of the pathway sequence.

Thanks to dual enrollment classes, some pathway students also felt like they had a clearer understanding of what postsecondary education would look like. One student recalled how different the expectations were in their dual-enrollment course and this “made [them] aware of what to expect.” Another student mentioned that “all the classes and people they have interacted with” through the pathway program has made them feel like they know how to submit a better application to a local college known for its nursing program.

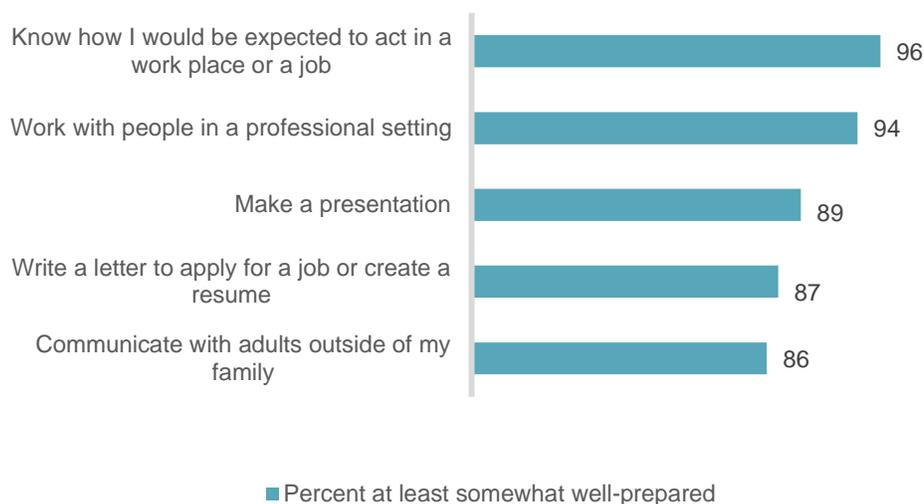
***Students said they developed practical career readiness skills.***

Students reported that work-based learning helped them gain knowledge and skills that made them feel more career ready. In the student survey, nearly three-quarters of internship participants (71 percent) indicated that their internships helped them prepare for the careers in which they are interested. In a focus group, grade 12 students described learning “how to talk to adults” in their internships, which helped them “develop confidence and assertiveness and become more relaxed” about entering the workforce. In addition to the “interpersonal and communication skills” cited by multiple students, one student commented on the “very strict and professional setting” of their internship and seemed impressed by how seriously their employer considered things like tardiness, understanding and following rules, and dress code.

Students described that, in addition to preparing for health careers, they were learning practical skills such as public speaking and resume writing, which they recognized would be useful as they enter or continue in the workforce. Staff and students both reported that students were exposed to these skills largely via the ECCCO curriculum as well as through drop-in support at school-site college and career centers. Schools offering district-supported ECCCO internships must teach the associated curriculum, which trains students in workplace skills and prepares them to apply for and participate successfully in internships. The curriculum was most often taught in CTE courses, although in one health pathway, phone skills, professional email skills, and writing resumes and cover letters were part of the grade 11 English curriculum. A student focus group participant from a well-established health pathway described how resume training, interview training, and preparation for talking to adults were all helpful in developing his confidence, assertiveness, and in keeping him “feeling more relaxed” in interviews and work environments.

Student survey respondents were also very positive about their preparedness to use a variety of practical skills in a work or school environment. Almost all the students responded they were at least somewhat well prepared to act appropriately in a workplace or job (96 percent) and work with people in a professional setting (94 percent). A slightly lower percentage responded they were at least somewhat well prepared to communicate with adults outside of their families (86 percent), write a letter to apply for a job or create a resume (87 percent), or make a presentation (89 percent), but the perceived level of preparedness was still high (Exhibit 10).

Exhibit 10. Student perceptions of preparedness to use practical skills at work or school, n = 137



Test-taking was the only skill that students from one well-established pathway consistently stated was underemphasized in their pathway experiences. Focus group participants agreed that, although they were well prepared to speak in public and write essays, they lacked test-taking skills that many suspected they would need in college and in the current economy, in which two-thirds of entry-level jobs and 80 percent of family-sustaining jobs currently require at least some education or training beyond high school (Carnevale et al., 2018). Several staff members in the pathway also mentioned this weakness during interviews.

**Staff said students grew in confidence, self-efficacy, and sense of belonging.**

According to pathway staff, the impact of health pathways exceeded specific career or academic lessons students learned—to also influence students’ beliefs in their own abilities and knowledge. For example, a staff member from the alternative school described hearing more students proudly discussing what they had learned and accomplished in school with other students after pathway implementation. Similarly, a teacher at a different school believed that pathway participation increased student confidence:

But basically, what I do, my main thing is, I build confidence. That’s the biggest thing I’ve seen the pathway produce is confidence throughout students’ school days who never had confidence at school.

The specific experiences built into pathways—such as group projects and academic content relevant to work and life—were highlighted as key to building students’ self-belief. According to a staff member at a comprehensive school, pathway opportunities for “building foundational skills like leadership, communication, critical thinking, collaborative projects, and presentations to the community” helped students feel “ownership, agency, and [that] they are the agents of

change within their community.” Another staff member at this school described two students who gave a health-related presentation to community leaders despite deep reservations about their abilities. Successfully presenting their ideas to adults outside their school boosted the students’ self-efficacy and confidence as learners and community members.

Moreover, in schools with multiple pathways, the pathways functioned as small cohorts of similar interest within the larger school setting. Taking a series of courses with the same peers taught by a core group of teachers who collaborated and communicated regularly resulted in the formation of deep relationships among students and staff. Staff members in both new and established health pathways stated that students trusted that they would be part of a community and be presented with valuable learning opportunities: They “come in knowing the teachers will support them” and that they will be able to “build on what was done the previous year.” Students and staff in an established health pathway cited the feeling of community as one of the pathway’s major strengths. A student noted feeling a sense of “pride” about being part of and graduating from the pathway.

Other students in the same pathway reported feeling supported by teachers and enjoying having something important in common with their classmates. One student said she believed there were people “looking out for [her]” because she was a pathway member. In the alternative school, although health was the only pathway option, the pathway’s presence represented an opportunity for students to build positive identities as learners by engaging academically in a relevant topic of shared interest. A staff member from the alternative school noted that since the pathway was introduced, the “kids are definitely more engaged” and the pathway was a “bonding experience for everyone ... even just walking together to class across the school, they’re like a crew.” Within these tightly knit small cohort pathways, some students who realized through pathway participation that they were not interested in a health career still described feeling satisfied with their experience because of their connectedness to peers and staff members.

In contrast, students and staff members in the school with the schoolwide health pathway noted that universal membership precluded the intimacy of a small cohort for both students and staff. Further, they suggested that because the decision to attend the school was made at a younger age (and perhaps influenced by parents), there was disinterest and disengagement among some students and an altogether more diffuse pathway experience.

## **Conclusion**

Greater access to internships and other work-based learning opportunities enabled students to discover new career options and academic pathways, explore their interests, and gain knowledge and skills to succeed in the workforce after high school. Health pathway students reported gaining a greater understanding of careers, clarifying their own career goals, and possessing an increased preparedness for college and career. Staff also described students

having more confidence and taking more ownership over their learning. Beyond individual student outcomes, the health pathways led to a greater sense of community and belonging among participants.

Despite increased work-based learning opportunities, students faced challenges in taking advantage of internships in particular. To mitigate barriers to internship participation, schools offered application assistance, and partners increased internships slots and made other accommodations for students. These efforts were successful in many respects. However, staff members and students identified areas for improvement and growth for health pathways. For example, while steps to mitigate barriers to participation internships were partially successful, there is an opportunity to increase the availability of offerings for students with particularly challenging schedules or situations. Further, students described a lack of connections between their work-based learning experiences and their academic coursework.

To produce more equitable outcomes—students of all backgrounds and abilities prepared for success after high school—students must have equitable access to learning opportunities. The OHPP made progress toward achieving its goals of equity by taking intentional actions to remove structural barriers (e.g., adding slots and making accommodations for students) and create additional supports for the students with the greatest needs.



## Chapter 5: Student outcomes

As described in the previous chapters, the health pathways in OUSD are designed to make academic content more relevant to students and to give them exposure to health careers through a range of work-based learning experiences. These pathways follow the Linked Learning approach, which seeks to connect classroom learning to the real world to help students understand how their high school education leads to their next academic or career steps (Linked Learning Alliance, n.d.). The core components of a Linked Learning pathway—rigorous academic coursework integrated with a sequence of career technical courses, work-based learning, and student supports—are designed to increase students' engagement in school beyond what traditional high school models can achieve. With the right set of classes and appropriate supports, engaged students should develop measurable academic knowledge and be able to graduate from high school intellectually ready for college and careers. Moreover, the 21<sup>st</sup>-century skills developed through project- and work-based learning, and study skills developed through student supports and rigorous academic curriculum, should prepare students for postsecondary success in college or the workforce.

Thus, as part of the evaluation of OHPP, it is important to examine how effective health pathways were in increasing students' high school and early postsecondary outcomes. This chapter presents estimates of the effects of health pathway participation on 11<sup>th</sup> grade standardized test scores, credits earned between 10<sup>th</sup> and 12<sup>th</sup> grade, completion of college eligibility requirements and number of requirements met, drop-out, high school graduation, and college enrollment rates, and enrollment in a 4-year versus 2-year college for students expected to graduate high school in 2018.

### **Analytic Approach**

We used a multilevel modeling approach with propensity score weighting to compare health pathway students' outcomes with those of students in traditional high school programs who had similar demographic characteristics and prior achievement. For context, we also provide a secondary analysis comparing students in health pathways to students in other career-themed pathways (see technical report<sup>4</sup> or methodological details).

Exhibit 11. Student Outcome Measures

Outcome	Description
<b>High School Academic Achievement</b>	
English Language Arts (ELA) achievement	Student's 11 <sup>th</sup> grade ELA Smarter Balanced Assessment score
Math achievement	Student's 11 <sup>th</sup> grade Math Smarter Balanced Assessment score
<b>High School Course-taking</b>	
Credits earned <sup>a</sup>	Total number of course credits earned between 2015–16 and 2017–18 (10 <sup>th</sup> through 12 <sup>th</sup> grades if student follows expected progression)
Completion of college eligibility course requirements <sup>a</sup>	Completion of all seven a-g requirements <sup>13</sup> for University of California or California State University college eligibility as of June 2018
Number of college eligibility course requirements met <sup>a</sup>	Number of a-g requirements met as of June 2018
<b>High School Graduation and Drop out</b>	
Drop out	Student dropped out as of or prior to June 2018
High school graduation	Student graduated as of or prior to June 2018 (i.e., on-time graduation) <sup>14</sup>
<b>Early Postsecondary</b>	
Direct college enrollment	Enrollment in any 2- or 4-year postsecondary institution in fall 2018, conditional on completing high school
4-year (vs. 2-year) college enrollment	Enrollment at a 4-year postsecondary institution the fall term following a student's anticipated high school completion date, conditional on any college enrollment

<sup>a</sup> End-of-high school course outcomes calculated only for students who did not drop out

### Context and Limitations

OUSD implemented the OHPP initiative while simultaneously transitioning toward having all high school students enrolled in a career-themed pathway. As a result, the number of students remaining in traditional high school programs who could serve as a comparison group for the health pathway students was diminishing as the number of students in pathways increased. This reality created two key study limitations. First, the analysis is limited to one early cohort of students attending a subset of health pathways, limiting the generalizability of findings. Second, the analysis is vulnerable to selection bias.

<sup>13</sup> The a-g subject areas (based on University of California and California State University college eligibility requirements) are as follows: A – history/social science; B – English; C – math; D – laboratory science; E – language other than English; F – visual and performing arts; G – college preparatory elective.

<sup>14</sup> We defined graduate using the updated 2017 state criteria (California Department of Education, 2018a). Students who receive adult education high school diplomas or passed the California High School Proficiency Exam are no longer considered regular high school graduates, along with students who receive General Educational Development or special education certifications.

## LIMITED COHORT

The class of 2018 was the first cohort with a complete progression (10<sup>th</sup> through 12<sup>th</sup> grade) in pathways enhanced by the OHPP initiative. Because of the transition to wall-to-wall pathways, the class of 2018 was also the last cohort in which there was a sufficient comparison group of students left in traditional high school programs. As a result, these analyses do not include the four pathways newly created as part of the OHPP initiative (two of which are in continuation high schools) because they did not serve the class of 2018.

The three pathways included in these analyses pre-dated the OHPP initiative but were enhanced by the additional supports and partnership opportunities afforded by the initiative. This is the same cohort surveyed in *Chapter 4: Student experience*. These findings do not generalize to the newly created health pathways.

## SELECTION BIAS

For the class of 2018, pathway enrollment was still voluntary, but students were increasingly encouraged to enroll in a Linked Learning pathway. The students who continued to choose *not* to enroll were increasingly likely to be different from those who did in observed and unobserved ways. This type of phenomenon is known as selection bias.<sup>15</sup> If students who chose health career pathways were more motivated, engaged, or had more stable home environments than students who remained in traditional high school programs (all unobserved characteristics), we would expect the bias to result in artificially large health career pathway effect sizes.

For this reason, we also examined health pathway students' outcomes in relation to students in other career-themed pathways (e.g., Engineering; Social Justice Reform; Fashion, Arts, and Design). This secondary pathway-to-pathway comparison provides some context to the focal health pathway vs. traditional high school comparison in that it reduces the threat of selection bias resulting from students choosing to enroll in a pathway instead of remaining in a traditional high school program. However, students who chose a health career pathway might still differ in unobserved ways from those who chose a pathway with a different career theme. This analysis also allowed us to consider whether health pathways specifically had effects on student outcomes above and beyond that of pathways generally.

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<sup>15</sup>When using statistical models to estimate outcome differences between two groups, selection bias that is not accounted for can lead to results indicating the intervention had larger or smaller effects than it actually did. If the two groups differ in observed ways (i.e., characteristics that are tracked in an accessible data source), these differences can be adjusted for in the statistical models. However, if groups differ in unobserved ways that are also related to the outcome of interest, results may be biased. For example, students who are more motivated to work hard in school, or whose families are more stable and supportive, may be more likely to enroll in pathways. These students are also more likely to have better outcomes regardless of pathway participation.

## Sample Characteristics

Our sample of health pathway students consisted of 220 10<sup>th</sup> graders who were enrolled in three health pathways that pre-dated but were enhanced by the OHPP. The traditional high school comparison group consisted of 870 students at eight traditional high schools who were not enrolled in any career-themed pathway. The other-pathway comparison group consisted of 1,070 students enrolled in 19 career-themed pathways at eight schools.

Health pathway students differed from students in traditional high school programs, as well as from students enrolled in other career-themed pathways, on both demographic characteristics and prior achievement. For example, compared to the other groups, the health pathways group had a lower percentage of African American students and a higher percentage of White students (Exhibit 12). Health pathways had fewer English Language Learners and students in special education. On average, health pathway students also had the highest 7<sup>th</sup> grade standardized test scores in ELA and math. Health pathway students similarly measured higher on other achievement characteristics, such as 8<sup>th</sup> grade gifted and talented (GATE) program participation and 9<sup>th</sup> grade GPA; we report on additional student characteristics in the technical report<sup>4</sup>.

These sample characteristics suggest that *before enrolling in pathways*, health pathway students were a somewhat higher achieving and lower risk group compared to students in traditional high school programs. The characteristics of students in other pathways suggest that they are, on average, less advantaged and lower achieving than students in health pathways but more advantaged and higher achieving than traditional high school students.

Exhibit 12. Demographic and Prior Achievement Descriptive Statistics for Health Pathway, Traditional High School, and Other Pathway Groups

Variable	Health Pathway	Traditional High School	Other Pathway
<b>Student Demographics</b>			
	Percent	Percent	Percent
Latino	44	43	41
African American	19	32	31
Asian	18	12	17
White	12	8	7
Multiple race/ethnicities	4	2	1
Other race/ethnicity	3	3	4
English Language Learner	15	22	19
Special education	11	15	12
Gifted and Talented Program	22	14	18
<b>Prior Achievement</b>			
	Mean Score	Mean Score	Mean Score
English Language Arts CST	351	334	343
Grade-level Math CST	334	322	331
9 <sup>th</sup> grade GPA	2.9	2.3	2.6

Note. We combined Filipino, Native American/Alaska Native, and Pacific Islander into a single “other race/ethnicity” group because sample sizes were less than 5 in each category in the health pathway group. Race/ethnicity, English Language Learner, and special education status were measured in 9<sup>th</sup> grade. Gifted and talented (GATE) program participation was measured in 8<sup>th</sup> grade. We used 7<sup>th</sup> grade California Standards Test (CST) scores from 2012–13 as measures of prior achievement because 8<sup>th</sup> grade scores were unavailable; OUSD transitioned standardized tests in 2013–14, and no single test was administered to all students that year.

## Findings

We found health pathway students significantly outperformed traditional high school students in high school course credits earned, number of college eligibility requirements met, graduation, and college enrollment. The two groups did not differ in high school ELA and math achievement, completion of college eligibility requirements, drop out, and enrollment in 4-year (rather than 2-year) college. We also found health pathway students did not differ from students in other career-themed pathways on any of these nine outcomes.

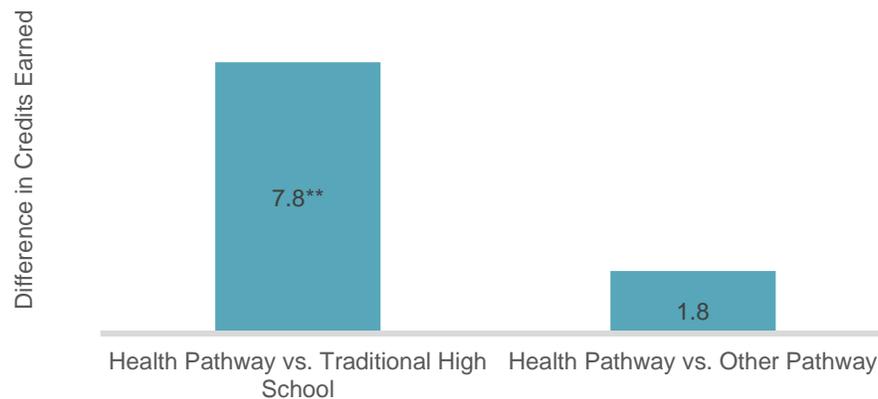
### HIGH SCHOOL ACADEMIC ACHIEVEMENT

Health pathway students did not differ from traditional high school students, or from students in other pathways, on their 11<sup>th</sup> grade ELA or math standardized test scores.

## HIGH SCHOOL COURSE-TAKING

On average, health pathway students earned almost eight more course credits during their 10<sup>th</sup> through 12<sup>th</sup> grade years than similar peers in traditional high school programs (Exhibit 13). In California high schools, a semester-long course is typically five credits, so this difference is roughly equivalent to one and one-half semester-long courses. There was not a statistically significant difference in the number of course credits earned by health pathway students and similar peers enrolled in other career-themed pathways.

*Exhibit 13. Average Difference in 10<sup>th</sup> – 12<sup>th</sup> Grade Credits Earned*

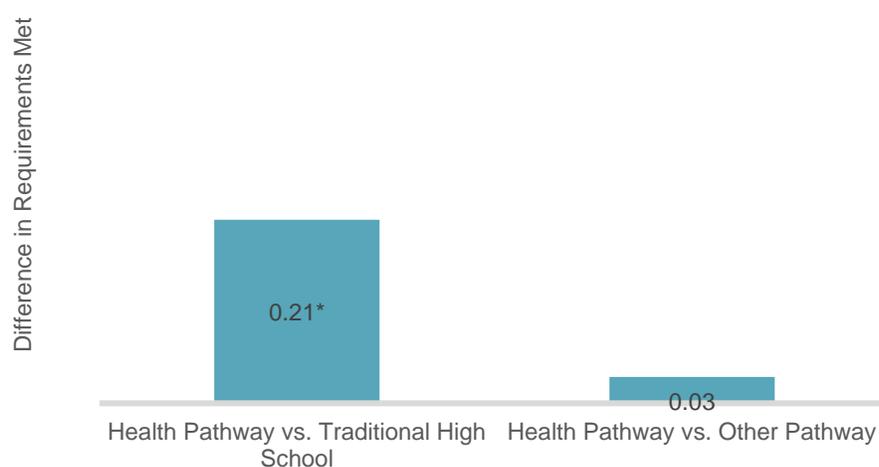


\*\*Statistically significantly different at  $p < .01$  level.

Exhibit reads: On average, health pathway students earned 7.8 more course credits during their 10<sup>th</sup> through 12<sup>th</sup> grade years than similar peers in traditional high school programs. Health pathway students and students in other career-themed pathways earned a similar number of credits (no statistically significant difference).

In addition to course credits earned, we also explored the extent to which health pathway students were more likely to complete course-taking requirements in the seven subject areas necessary for enrollment eligibility in the University of California (UC) and California State University (CSU) systems. On average, health pathway students completed 0.21 more subject area requirements than similar peers in traditional high school programs (Exhibit 14); however, the two groups did not differ in their likelihood of completing the full suite of seven requirements to become UC/CSU eligible. Health pathway students did not differ significantly from students in other career-themed pathways in either the number of college eligibility requirements met or the completion of all seven requirements to become UC/CSU eligible.

Exhibit 14. Average Difference in Number of College Eligibility Requirements Met



\*Statistically significantly different at  $p < .05$  level.

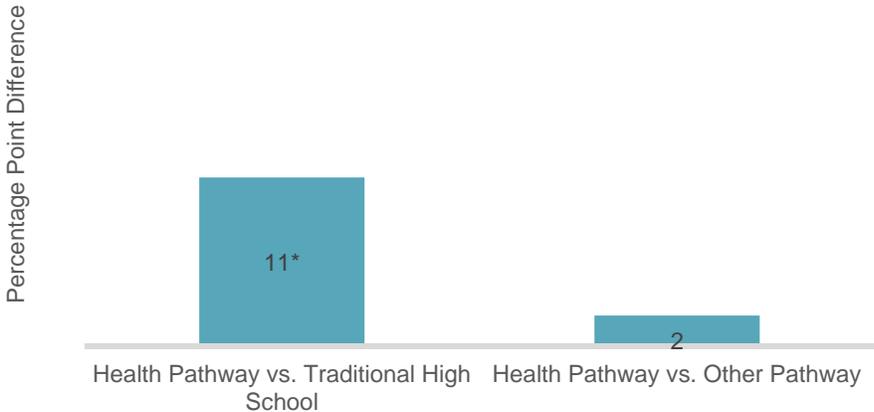
Exhibit reads: On average, health pathway students completed 0.21 more eligibility requirements than similar peers in traditional high school programs. Health pathway students and students in other career-themed pathways completed a similar number of eligibility requirements (no statistically significant difference).

## HIGH SCHOOL GRADUATION AND DROP OUT

On average, health pathway students were 11 percentage points more likely to graduate from high school on time than similar peers in traditional high school programs (Exhibit 15). For context, this is equivalent to approximately four-fifths of the size of the gap in graduation rates between African American and White students in the class of 2018 in California (California Department of Education, 2018b). Health pathway students and students in other career-themed pathways were equally likely to graduate high school.

Although health pathway students were more likely to graduate than traditional high school students, they were not significantly less likely to drop out. On-time graduation and drop-out rates are not two sides of the same coin; students who fail to graduate on time may still be enrolled or may have completed high school through other means, such as receiving a special education certificate.

Exhibit 15. Average Difference in Likelihood of High School Graduation

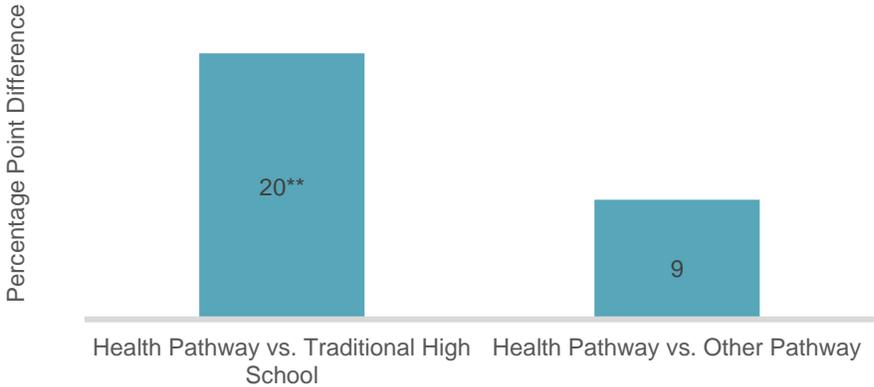


\*Statistically significantly different at  $p < .05$  level.  
 Exhibit reads: On average, health pathway students were 11 percentage points more likely to graduate than similar peers in traditional high school programs. Health pathway students and students in other career-themed pathways were equally likely to graduate (no statistically significant difference).

**Early postsecondary outcomes**

We found that among students who completed high school, health pathway students were 20 percentage points more likely to enroll in college compared to similar traditional high school students (Exhibit 16). Health pathway students and students in other career-themed pathways were equally likely to enroll in college.

Exhibit 16. Average Difference in Likelihood of College Enrollment



\*\*Statistically significantly different at  $p < .01$  level.  
 Exhibit reads: Among students who completed high school, health pathway students were, on average, 20 percentage points more likely to enroll in college than similar peers in traditional high school programs. Health pathways students and students in other career-themed pathways were equally likely to enroll in college (no statistically significant difference).

Among students who enrolled in college, health pathway students were equal to similar peers in both traditional high school programs and other career-themed pathways in the likelihood of attending a 4-year rather than 2-year institution.

## **Conclusion**

As a component of the SRI evaluation of the OHPP, we compared health pathway students' outcomes with those of students who had similar demographic characteristics and prior achievement but were in two other programs of study: 1) traditional high school programs, and 2) other career-themed pathways. We found health pathway students significantly outperformed traditional high school students on key indicators of success in high school and the transition to postsecondary education. However, we found no differences in the outcomes of students who participated in health pathways compared to those in other career-themed pathways.

In interpreting these results, it is important to remember they are for a single cohort of students attending a subset of health pathways. Moreover, because the majority of OUSD high school students were enrolled in some type of career-themed pathway at the time of these analyses, the students who chose to remain in the district's shrinking traditional high school programs were potentially different from health pathway students in ways we could not statistically account for (e.g., lower motivation, engagement, stability of home environment). If this was the case, the effects on achievement of attending a health pathway rather than a traditional high school may be inflated.

Nonetheless, the size of the effects on credits earned, high school graduation, and college enrollment are substantial enough that, even if there is some inflation present due to selection bias, it is unlikely to account for the full effects.<sup>16</sup> These results suggest health pathways are a promising means to improving students' high school and postsecondary outcomes.

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<sup>16</sup> See Technical Report<sup>4</sup> for a sensitivity analysis of the findings presented in this chapter.



## Chapter 6: Discussion

The OHPP represents an ambitious effort to expand, enhance, and diversify health pathways in OUSD high schools and forge a lasting partnership between the school district and the region's public health sector to grow work-based learning opportunities for students. Through the OHPP, OUSD succeeded in doubling the number of students enrolled in health pathways, increasing the representation of males in health pathways and, to a lesser extent, increasing the representation of low-income and African American students. The OHPP also increased the number of work-based learning opportunities available to pathway students in the health care fields and reduced the barriers to participating in internships that disadvantaged students confront. However, turnover in district leadership of the initiative hindered both the progress of the partnership and pathway development. The need to continually re-establish relationships and common vision among the partners, and lack of consistency for pathways in the district leadership and support slowed implementation.

The SRI Education team's evaluation also found health pathway students significantly outperformed traditional high school students on key indicators of success in high school and the transition to postsecondary education. However, we found no differences in the outcomes of students who participated in health pathways compared to those in other career-themed pathways.

The OHPP implementation, both its challenges and successes, offers lessons that may benefit those engaged in similar efforts. In this concluding chapter, we provide four key reflections on the OHPP implementation for the benefit of school districts and industry partners considering undertaking similar work.

### ***Don't shortchange partnership development***

Establishing effective education-industry partnerships takes time and dedication. Even with shared core values, partners need to meet to develop shared language, clarify goals, and learn enough about each others' organizational structures and norms so they can determine how to effectively interact with one another. Determining who needs to be at the table from each organization is an important first step, and documenting decisions as well as codifying a concrete action plan for how the partnership will operate is crucial to avoid losing momentum due to staff turnover.

### ***Location, location, location.***

Although staff members at both existing and new pathways sites made an effort to recruit a diverse pool of students, OUSD was most successful in increasing representation of underrepresented minorities and young men of color by locating new pathways in continuation high schools and comprehensive high schools that serve large proportions of these populations. Research suggests that even in choice-based assignment systems, low-income and minority students generally choose their neighborhood school due to convenience, tradition,

lack of transportation to other district public schools, and to be with other students with similar backgrounds (Makris, 2015; Saporito & Lareau, 1999; Weiher & Tedin, 2002). These constraints underline the imperative to locate pathways in schools that serve low-income and minority students and increase access for those groups.

***Equity doesn't just happen.***

Low-income and underrepresented minority students confront substantial barriers to participating in work-based learning experiences. These barriers can be overcome, but they require both attention and resources. The OHPP made progress toward achieving its goals of equity by taking intentional actions to remove structural barriers (e.g., providing internship stipends, creating experiences that don't conflict with summer credit recovery programs) and creating additional supports for the students with the greatest needs. This type of success is not achieved accidentally and is the result of intentional planning and the dedication of key resources.

***Don't forget the teachers***

Connecting work-based learning to classroom learning fosters student engagement by reinforcing academic lessons and underscoring their real-world relevance. Integrating work-based learning cannot be done well without the active involvement of the pathway teachers, who can help students prepare for these experiences and connect them to what students are learning in school. Although the OHPP took some promising steps to support this integration (e.g., funding teacher externships, creating a PLC for health pathway teachers), building connections between industry partners and teachers proved challenging. As a result, health pathway students did not perceive a strong connection between their work-based learning experiences and course work.

## References

- California Department of Education. (2019a). 2018–19 Enrollment by Subgroup for Charter and Non-charter Schools: Oakland Unified Report (01-61259). Retrieved from <https://data1.cde.ca.gov/dataquest/dgcensus/EnrCharterSub.aspx?cds=0161259&aggllevel=district&year=2018-19>
- California Department of Education. (2019b). 2019–20 Enrollment by Ethnicity for Charter and Non-Charter Schools: Oakland Unified Report (01-61259). Retrieved from <https://data1.cde.ca.gov/dataquest/dgcensus/EnrCharterEth.aspx?cds=0161259&aggllevel=district&year=2018-19>
- California Department of Education. (2018a). State Superintendent Torlakson Reports 2017 High School Graduation Rates. Retrieved from <https://www.cde.ca.gov/nr/ne/yr18/yr18rel50.asp>
- California Department of Education. (2018b). State Superintendent Torlakson Announces 2018 Rates for High School Graduation, Suspension and Chronic Absenteeism. Retrieved from <https://www.cde.ca.gov/nr/ne/yr18/yr18rel76.asp#Table1>
- California Department of Education: Student Poverty FRPM Data. (2019). Retrieved from: <https://www.cde.ca.gov/ds/sd/sd/filessp.asp>
- Carnevale, A., Strohl, J., Ridley, N., & Gulish, A. (2018). Three educational pathways to good jobs: High school, middle skills, and bachelor’s degree. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from <https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/3ways-FR.pdf>
- Center for Health Workforce Studies. (2016). Health care employment projections, 2014-2024: An analysis of Bureau of Labor Statistics projections by setting and by occupation. Rensselaer, NY: Center for Health Workforce Studies. Retrieved from [www.chwsny.org/wp-content/uploads/2016/04/BLS-Health-Care-Employment-Projections\\_2016.pdf](http://www.chwsny.org/wp-content/uploads/2016/04/BLS-Health-Care-Employment-Projections_2016.pdf)
- California Future Health Workforce Commission. (2019). Meeting the Demand of Health: Final Report of the California Future Health Workforce Commission. Retrieved from <https://futurehealthworkforce.org/>.
- California Student Aid Commission dashboard. (n.d.). Retrieved from <https://webutil.csac.ca.gov/dashboard/>
- Guha, R., Caspary, K., Stites, R., Padilla, C., Arshan, N., Park, C., Tse, V., Astudillo, S., Black, A., & Adelman, N. (2014). Taking stock of the California Linked Learning District Initiative. Fifth-year evaluation report. Menlo Park, CA: SRI International.
- Kacik, A. (2017). Healthcare industry to create 4 million jobs by 2026. Modern Healthcare. Retrieved from [www.modernhealthcare.com/article/20171027/NEWS/171029879](http://www.modernhealthcare.com/article/20171027/NEWS/171029879)
- Hinton, C., Fisher, K., and Glennon, K. (2012). Mind, Brain, and Education. The Students at the Center Series, Jobs for the Future. Retrieved from <https://www.howyouthlearn.org/pdf/Mind%20Brain%20Education.pdf>
- Linked Learning Alliance. (2012). Work-Based Learning in Linked Learning: Definitions, Outcomes, and Quality Criteria, Field Review Draft. Retrieved from <http://www.temescalassoc.com/db/lias/files/2015/05/WBL-Definitions-Outcomes-Criteria.pdf>
- Linked Learning Alliance. (n.d.) Linked Learning Guiding Principles. Retrieved from <http://www.linkedlearning.org/en/about/>

- Oakland Unified School District. (2014). *Oakland Unified School District: Pathway to Excellence 2015-2020*. Retrieved from <https://www.ousd.org/cms/lib/CA01001176/Centricity/Domain/105/Fast%20Facts%20-%202018-19%20-%20OUSD%20Districtwide.pdf>  
<https://www.ousd.org/cms/lib/CA01001176/Centricity/domain/3/update%20pte/OUSD%20Strategic%20Plan%20Update%2008.12.15.pdf>
- Oakland Unified School District. (2018). Fast Facts – 2018-2019. Retrieved from <https://www.ousd.org/cms/lib/CA01001176/Centricity/Domain/105/Fast%20Facts%20-%202018-19%20-%20OUSD%20Districtwide.pdf>
- Oakland Unified School District: Enrollment Snapshot. (n.d.). Retrieved from: [https://dashboards.ousd.org/views/Enrollment/Snapshot?embed=y&:showShareOptions=true&:display\\_count=no&:showVizHome=no&:render=false#7](https://dashboards.ousd.org/views/Enrollment/Snapshot?embed=y&:showShareOptions=true&:display_count=no&:showVizHome=no&:render=false#7)
- Schmidke, K. (2019). Oakland Unified School District: Pathway Demographics. Retrieved from: [https://dashboards.ousd.org/views/PathwayEnrollment\\_1/PathwayDemographics?%3Aembed=y&%3Adisplay\\_count=no&%3Arender=false#54](https://dashboards.ousd.org/views/PathwayEnrollment_1/PathwayDemographics?%3Aembed=y&%3Adisplay_count=no&%3Arender=false#54)
- Shapiro, D. (1999). School-to-Work Partnerships and Employer Participation: Evidence on Persistence and Attrition from the National Employer Survey, National Center for Postsecondary Improvement. Retrieved from [https://web.stanford.edu/group/ncpi/documents/pdfs/2-10\\_PartnerEmploy.pdf](https://web.stanford.edu/group/ncpi/documents/pdfs/2-10_PartnerEmploy.pdf)
- Tyack, D. and Cuban, L. (2001). *Tinkering toward Utopia: a Century of Public School Reform*, Harvard University Press.
- U.S. Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis. 2017. Sex, Race, and Ethnic Diversity of U.S. Health Occupations (2011-2015), Rockville, Maryland. Retrieved from <https://bhw.hrsa.gov/sites/default/files/bhw/nchwa/diversityushealthoccupations.pdf>
- Chen, Wei-Bing; Warner, Miya; Park, C.J., Wei, Xin; Tiruke, Tejaswini; Williamson, Cyndi; and Bengel, Candice. (2020). Evaluation of the Oakland Health Pathways Project: Technical Report. SRI Education: Menlo Park, CA.