

Feature 4: Deeper Learning Curriculum

“You get to create 3D models, do research, and exhibitions. You do projects. You come up with your own topics and problems. You create the questions and answer them. You write theme, plot, and character essays. You do visuals. [The teachers] don’t want it to be boring for you.”

—Student at Vanguard High School⁶⁸

What Students Need

As factory-model schools were designed, the curriculum was intended to cover a body of content—differentiated by track—transmitted to students largely for recall and reproduction. Guided by textbooks, it has often consisted of disconnected facts that are not deeply explored. Pacing guides assume that students all learn at the same rate, by absorbing information in the same way. Standardized tests often reinforce this approach by encouraging coverage of vast amounts of material and using superficial multiple-choice questions to assess students. Rather than feeling like drivers of their own learning, students understand that what is expected of them each day is to follow the teachers’ directions and complete a required set of tasks that may not be challenging, meaningful, or interesting to them. This factory-model approach is a major reason students say they disengage or drop out.⁶⁹

We know from research in the learning sciences that students learn at different paces and in different ways that build on their prior experiences and connect to their interests, modes of processing and expression, and cultural contexts. Further, the most powerful mode of learning for human beings is generated by meaningful inquiry that awakens the brain to search for answers.⁷⁰ An inquiry-oriented curriculum aimed at transferable learning—that is, learning that can be tapped and used in other settings—engages students and challenges them to understand concepts deeply, find and integrate information, assemble evidence, weigh ideas, and develop skills of analysis and expression.

Even well-intentioned efforts to ensure that all students learn to high standards can miss the most important part of the equation: the students themselves and their ability to make meaning of information, experience, and the world they live in so that they can use knowledge for their own purposes. Especially at the secondary level, students come to school with a wealth of knowledge, skills, habits, and views about the world and their role in it. As educator Deborah Meier explains, a good school should offer “a rich and interesting curriculum full of powerful ideas and experiences aimed at inspiring its students with the desire to know more, a curriculum that sustains students’ natural drive to make sense of the world and trusts in their capacity to have an impact upon it.”⁷¹

Key Practices

Learning Through Inquiry

Schools that motivate and succeed with diverse learners do not focus on getting through the textbook or touching topics superficially. They demand intellectually challenging work, and they are focused on preparing all students to meet the skill and content demands of college and careers—what is now known as deeper learning. Curriculum focuses not just on content expertise but on other essential competencies

as well, including critical thinking and problem-solving, collaboration, effective communication, self-directed learning, and academic mindsets. (See [Table 2.](#)) In schools that enable students to learn deeply, students are typically asked to engage in inquiry in all classes, applying their learning to novel problems and tasks and producing significant pieces of analytic work, including research papers, projects, models, and designs.

Bob Moses, founder of the Algebra Project, used to say that in traditional classrooms, students often seem like spectators, watching the teacher perform. It should be the other way around, he said, with the students “on the field playing the game,” and the teacher acting as a coach.⁷² In inquiry-based teaching, lessons are often structured around essential questions that get to the heart of an issue and allow in-depth exploration. For example, a history class might approach a unit featuring student research on the European “discovery” of the Americas using a question such as, “How should we remember Christopher Columbus today?” Within individual lessons, teachers or students themselves can facilitate inquiry-based discussions during which students listen deeply to one another’s points of view, explore evidence, and agree or disagree with their peers’ analysis. Inquiry can also involve longer-term research projects in which, rather than just reporting information, students ask questions, consider alternatives, conduct analysis, and apply their knowledge.

Table 2. Transforming Schools to Advance Deeper Learning

Transforming from a school with ...	Toward a school with ...
Transmission teaching of disconnected facts	Inquiry into meaningful problems that connect areas of learning
A focus on memorization of facts and formulas	A focus on exhibitions of deeper learning
Standardized materials, pacing, and modes of learning	Multiple pathways for learning and demonstrating knowledge
A view that students are motivated—or not	An understanding that students are motivated by engaging tasks that are well supported
A focus on individual work; consulting with others is “cheating”	A focus on collaborative work; consulting with others is a major resource for learning
Curricula and instruction rooted in a canonical view of the dominant culture	Curricula and instruction that are culturally responsive, building on students’ experiences
Tracking, based on the view that ability is fixed and requires differential curriculum	Heterogeneous grouping, based on the understanding that ability is developed in rich learning environments

Source: Learning Policy Institute & Turnaround for Children (now Center for Whole-Child Education). (2021). *Design principles for schools: Putting the science of learning and development into action.*

In inquiry-based classrooms, students are engaged in activities aimed at the mastery of facts as well as in-depth understanding. A student from Vanguard High School (a member school of the New York Performance Standards Consortium) explains how this impacts students:

You get to create 3D models, do research, and exhibitions. You do projects. You come up with your own topics and problems. You create the questions and answer them. You write theme, plot, and character essays. You do visuals. [The teachers] don't want it to be boring for you.⁷³

A student from another school explained how his humanities teacher took an inquiry-based approach by asking her students real questions and taking their answers seriously:

Some other teachers, when they ask a question, you know they're looking for a certain answer. But when Amina asked a question, she was asking us a real question. She wouldn't directly contradict students' ideas, or gloss over them and move on if she thought they were not the right answer. She would try and build on them and try to get students to think critically about them and let students come to their own conclusions.⁷⁴

Project-Based Learning

One form of inquiry-based teaching links curriculum topics to real-world issues through project-based learning, in which students are engaged in challenging tasks that usually involve knowledge and skills from more than one academic discipline. Many classes require students to do investigations that entail critical thinking, problem-solving, collaboration, and communication. Students must engage in sustained inquiry, make choices about questions to explore, get critiques and make revisions, and present a real-world product to an authentic audience, including written documentation and, often, an oral presentation and defense.⁷⁵ These tasks, which are key components of a performance assessment system, allow students to show that they have met high standards. (For more on performance assessment, see [Feature 6: Authentic Assessment](#).)

A teacher at Vanguard High School in New York City explains how he prepares his students, most of whom come from low-income households, to engage in rigorous project-based learning of the sort that many students do not encounter until after high school:

I use in-depth approaches and assign college-level research projects. For 2 months, each morning, we teach students research skills and essay skills so that they can do a minimum 20-page research paper in history. They choose the topic. We develop their topic together. We develop an angle to the topic. I take them to the Donnell Library. First, I call the librarian and she gets books on their topics together. They browse through different books, take notes, and order their thoughts in an outline. Then, the kids have to listen to their teachers and peers criticizing their work. Then they have to rewrite. They have to cite references, show evidence, and prove their thesis.⁷⁶

Project-based learning develops a wide range of language and collaboration skills, along with content knowledge. For this reason, it is used as a primary mode of instruction in the Internationals Network for Public Schools of more than 30 public secondary schools serving recent immigrant students from more than 100 countries in New York and New Jersey, the San Francisco Bay Area, and the Washington, DC, metro area. (See "[In Practice: Project-Based Learning](#)."

In Practice: Project-Based Learning

In contrast to the traditional method of teaching immigrant students in separate English as a Second Language (ESL) classes using an English-only approach, the [Internationals Network](#) school model emphasizes multilingualism, integrating English language development across academic content, and rigorous academics using project-based learning that locates the curriculum in real-world situations. These successful schools have a track record of enabling students who begin 9th grade with little or no knowledge of English to graduate and go on to college at very high rates.

At San Francisco International High School, for example, a 9th- and 10th-grade Biology class was focused on the question, “Should soda have a tax?” The teacher provided the question in English and five other languages so newly arrived students could immediately understand it, and students were encouraged to use Google Translate or consult with peers in their native language as needed. Students also had access to visuals accompanying research articles and other English-language documents to use in the inquiry process.

Students worked in pairs or small groups during many parts of the lesson, allowing more experienced students to mentor and model for less experienced students. Students learned key academic vocabulary (e.g., “glucose”) and used the terms to construct English sentences that developed their language skills (e.g., “When you don’t eat, the glucose decreases because your body uses the energy.”) There also were frequent opportunities for students to develop their oral English language skills through informal and formal dialogue with peers in which the only common language was English. For example, students were asked to share with their small group on the questions: “What did other people write? What did it make you think?” Throughout the lesson, the teacher circulated through the room, reinforcing routines and expectations for participation, and talking one-on-one with students to ensure they were getting the support they needed and were accessing scaffolding like sentence starters on the classroom wall.

This lesson eventually led to students writing persuasive essays in English about whether soda should be taxed. Over the course of a few weeks, students learned the science of how sugary drinks impact the human body, while also engaging with real-world issues around public health, individual choice, and taxation. In addition to developing their oral and written English skills, students analyzed a topic, crafted a thesis, selected evidence, and organized an argument.

A project around a question such as “Should soda have a tax?” can be accessed at nearly any skill level. For newcomer students with little or no English language, the emphasis might be on developing oral communication skills through peer interactions, accessing the science content primarily through their native language, and then writing a short essay in English with scaffolded sentence starters. A student who has developed academic English skills, on the other hand, might produce a research paper analyzing the science and social science issues raised by the topic. In addition to being an entry point to the academic content of biology, the question is inquiry-based, connected to a real-world issue that matters to government officials and the public, and relevant to the life experience of teenagers in the United States who have easy access to soda.

Source: Roc, M., Ross, P., & Hernández, L. E. (2019). *Internationals Network for Public Schools: A deeper learning approach to supporting English learners*. Learning Policy Institute.

There is evidence that this kind of teaching can change student outcomes.⁷⁷ For example, a study of more than 2,000 students in 23 restructured schools, most of them in urban areas, found much higher levels of achievement on complex performance tasks for students who experienced what these researchers termed “authentic pedagogy”—instruction focused on active learning in real-world contexts calling for higher-order thinking, consideration of alternatives, extended writing, and an audience for student work.⁷⁸ An analysis of national data found that students in restructured schools where “authentic instruction” was widespread experienced greater achievement gains on conventional tests.⁷⁹

Recent studies found that middle schoolers, including English learners, who participated in rigorous project-based learning in science outperformed their peers, and that high schoolers in Advanced Placement classes with project-based components did better on AP exams.⁸⁰ As a result of these studies, the College Board is adding [project-based components](#) to many of its courses and using them as part of the assessment process.

Schools can demand rigorous intellectual work from students only if they are willing to forgo the goal of superficial content coverage. Successful schools follow the Coalition of Essential Schools’ guiding principle of “less is more,” carefully choosing what to focus on so students gain in-depth understanding rather than simply exposure to large quantities of information that may be poorly understood.⁸¹ In-depth study does not imply haphazard selection of a few interesting ideas to focus on. Instead, topics are judiciously selected to provide a framework for many related key ideas, so students come away with an understanding of the core concepts and modes of inquiry in the academic disciplines they are studying.

In effective schools that create a high-leverage and highly supported learning experience, “less is more” applies not only to curricular choices but also to the overall school program. The traditional high school often takes a “shopping mall” approach,⁸² offering many electives for students to choose without guaranteeing they will graduate with serious mastery of essential skills for college, career, and life. Effective schools make deliberate choices about what is most essential and do those important things well for all students. They also supplement their own core offerings with out-of-school experiences such as community service, internships, online courses, and courses at local colleges. These programs, which require partnerships with community-based organizations and other agencies, allow secondary schools to provide choices and give students the opportunity to understand the world in which they are growing up.

Linked Learning

Powerful learning is about making connections between what we already know and what we want to learn, between and among ideas and people, and between schoolwork and real-life contexts and goals. To make a rigorous deeper learning curriculum effective, teachers make strong efforts to link the curriculum to students’ own lives and interests, their communities, and their goals for the future.

Linking Curriculum to Students’ Experiences. Connecting curriculum to students’ experiences does not imply that the content is watered down or confined to the students’ own immediate concerns. Instead, assignments are designed to link students’ experiences to the demands of a liberal arts curriculum that blends classical studies with contemporary and multicultural elements to which students can relate. For example, students compare works by Henrik Ibsen and Anton Chekhov to pieces by Gabriel

García Márquez and Toni Morrison. Sonia Sanchez sits alongside William Shakespeare. The study of constitutional rights is linked to issues students understand. As a teacher at Manhattan Village Academy, a high school in New York City, describes:

We try to relate historical issues to the present day. We connected Fourth Amendment rights to locker searches when a book bag was stolen. We discuss individual responsibility and what you want the government to take over. We discuss and debate to push them to develop their thoughts.

Similarly, calculations used on the basketball court can provide a foundation for certain math concepts if teachers are alert to support the transfer by building on this kind of real-world knowledge. Educators might also illustrate symbolic meanings in literature by beginning with rap lyrics and texts the students know and carrying their insights into study of more formal canonic texts.⁸³

Linking curriculum to students also means knowing them well enough to understand their preconceptions about the concepts being studied, in some instances building on them and in others explicitly challenging them. There is a classic example among science teachers trying to teach students about the phases of the moon. Many people have a misconception that the moon's phases are caused by the Earth casting a shadow over the surface of the moon. If this misconception is not explicitly unpacked by showing more accurate models to provoke a new understanding, students may sit through an engaging lesson about the phases of the moon and emerge still not knowing that the moon's phases are actually caused by its positioning relative to the Earth and the sun.⁸⁴ Good teachers understand that new learning sometimes requires taking the time to unlearn old ways of looking at the world.

Linking Learning to the Real World. Other linkages to the real world and to students' interests are forged through **community service and internships**. These opportunities not only extend the curriculum and make it more authentic, but they also allow young people to become responsible, linking the experiences to their futures. Knowing that adolescents want and need to become more self-directed, it is important that schools not infantilize adolescents by treating them as if they need to be constantly monitored and controlled. Effective schools give young people progressively more responsibility so they can grow and take ownership of their own learning. As they are responsible for the welfare of others, they develop pride and confidence in themselves and greater maturity in their perspectives about others. Community service activities and internships allow students to explore their interests and future career goals, contribute to the lives of others, and learn how to engage the world outside of home and school. This real-world work, which is typically accompanied by seminars and reflective assignments that help students process what they are learning, is part of the authentic curriculum experience.

Dual enrollment, another effective way to link students to their futures, establishes connections with local community colleges that allow students to enroll in selected courses or even an entire course of study that prepares them for a vocational credential or a start on a particular major. These experiences enable students to gain insight into the demands of college study and help them prepare for it. Rather than teachers saying, "You'll need this when you get to college," students experience what they need firsthand, which can help them develop commitment to the learning process. Moreover, students who complete dual enrollment courses get college credit that is usually transferable, eliminating the need

to take expensive Advanced Placement exams in the hope of gaining college units. Studies have shown that dual enrollment participation is positively related to college enrollment and persistence and higher college GPAs.⁸⁵

All these features are part of the design of **Linked Learning academies**, which restructure high schools by connecting them to communities, career pathways, and college opportunities while personalizing the learning environment. The Linked Learning approach, which has launched more than 600 industry-themed pathways that prepare students for both college and careers, began in California and has spread to more than 20 states. It challenges a major source of historic high school segregation: the design of two very separate tracks—college prep and vocational education—differentiated by perceived academic ability as well as race and class. In a world where knowledge explosion and rapid technological change mean that the vast majority of jobs require some postsecondary education and where young people are predicted to change jobs at least 10 times in their lives, neither of these tracks provides students with all the knowledge and skills they need to thrive in today’s world. Linked Learning pathways reject this false choice by bringing together college and career preparation through:

- small learning communities that are personalized through advisement systems and curriculum design;
- rigorous academics that are aligned to admissions requirements for state colleges and universities and designed around authentic curriculum with real-world applications and performance assessments that show what students can do in applying their learning;
- industry partnerships in fields ranging from health professions to law and social justice to aviation to STEM to teaching and the arts that coconstruct career learning opportunities, making both academic and career courses more relevant by applying knowledge and skills to these contexts;
- work-based learning, providing students with exposure to workplaces through job shadowing, apprenticeships, internships, and more; and
- comprehensive support services, including counseling and supplemental instruction in reading, writing, and math, to address individual needs.⁸⁶

Students of all incomes and prior achievement levels in Linked Learning academies have lower dropout rates, higher graduation rates, and higher college-going rates than students in traditional schools.⁸⁷ These schools are successful because they support deeper learning in personalized settings that support equitable opportunities and outcomes, enabling students to connect to their futures.

School Profile: Connecting Students to Their Futures at Life Academy



Photo by Rodrigo Sandoval-Perez.

A major strategy for creating personalized small learning communities in California has been the set of **Linked Learning pathways** offering college and career preparation in high-demand industries, partnering with industry and community organizations. More than 600 pathways have been created since 2001, either as small learning communities in large high schools or as small schools. The academies support students with highly engaging applied learning, advisory programs, access for all to college preparatory coursework, and community-based internships as well as supports.

[Life Academy of Health and Bioscience](#) in Oakland, CA, serves 446 students in grades 6–12 in Oakland Unified School District, 99% of whom are students of color, 96% of whom are from low-income families, and 30% of whom are English learners. Opened in the fall of 2001, the health professions academy was designed based on research about effective small learning communities, and it was originally housed within a large comprehensive high school. Most of Oakland’s high schools—large and small—offer **Linked Learning academies**, and all of them are also community schools that offer a full suite of health care, social services, and expanded learning opportunities to their students (see [Feature 9: Community Connections and Integrated Student Supports](#)).

Life Academy’s mission is to dramatically interrupt patterns of injustice and inequity for underserved communities in Oakland. Through transformative learning experiences focused on health, medicine, and bioscience, students are engaged in inquiry-based learning and inspired to acquire the skills,

knowledge, and habits necessary to succeed in college and careers in the medical field. These skills are developed in part through the school's multiple performance-based exhibitions, which include an interdisciplinary and scholarly senior exhibition, and a wide array of student interest-driven post-session classes at the end of the year.

All students select one of the school's three career pathways—medicine, health, or biotechnology—and take courses and complete an internship aligned with that pathway. To support these internships, the school has developed deep relationships with industry partners including Oakland Children's Hospital, Youth Bridge (Alta Bates and Summit hospitals), and Highland Hospital. Besides the internships, hallmark instructional elements of the school include an emphasis on personalization, cross-disciplinary projects, public demonstration of mastery, a college preparatory curriculum, and productive group work.

The culminating work for students is the **senior research paper**—a yearlong, multistage assignment. Each student researches a question that emerges out of an internship experience. To answer the question, each student conducts a literature review; interviews an expert; writes a paper; and presents and defends findings to a panel that includes an advisor, students, and family or community members.

The school had a 91% graduation rate in 2021–22, and 96% of its students had completed the coursework for state university admissions, well above district and state averages. The school has typically placed 100% of its students in 2- or 4-year colleges. It has had the highest University of California and California State University acceptance rates of any high school in Oakland, with students going to schools such as UC Berkeley and UCLA, as well as Stanford, University of San Francisco, and Smith College.

When asked what high school experiences have contributed to their college readiness, more than 90% of Life Academy students list relationships with teachers and advisors. More than 90% also list features of their deeper learning experiences, including workplace internships, opportunities to explain their thinking, testing or trying out ideas to see if they work, evaluating themselves on their classwork, participating in peer review of their work, and having to revise their work until it meets standards of proficiency.

These practices are part of a performance-based, mastery-oriented, relationship-supported approach to learning that can create success for all students. Life Academy's focus on students drives every decision: what and how to teach authentically, what structures will equip students and teachers to know and believe in each other, and how to bring out the best in the students and their community.

Sources: California Department of Education. [Student Accountability Report Card, 2021–22](#); Darling-Hammond, L., Friedlaender, D., & Snyder, J. (2014). *Student-centered schools: Policy supports for closing the opportunity gap*. Stanford Center for Opportunity Policy in Education; Richardson, N., & Feldman, J. (2014). *Student-centered learning: Life Academy of Health and Bioscience*. Stanford Center for Opportunity Policy in Education; Stanford Center for Opportunity Policy in Education. (2014). *Student-centered learning: How four schools are closing the opportunity gap*. Printed with permission.

Additional Resources

Inquiry-Based Learning

- [Center for Inquiry in Teaching and Learning](#), New York Performance Standards Consortium: The Center provides professional development for schools in the Consortium, offering a wide range of workshops and events that nurture professionalism and collaboration. It also offers mentorship, training, and resources to other school systems and groups interested in inquiry-based teaching and performance assessment.
- [PBLWorks](#), Buck Institute for Education: This website provides K–12 educators with resources to design and facilitate high-quality project-based learning. Resources for practitioners to download include project ideas and sample planning forms, rubrics, student handouts, and more.
- [Project-Based Learning series](#), Edutopia: This series of articles and videos describes how project-based learning can have a positive impact on achievement and engagement. It provides an overview of the key features of project-based learning, the skills and mindsets that it nurtures and requires, and the ways it fits in with many curricular areas.
- [Resources and Downloads to Facilitate Inquiry-Based Learning](#), Edutopia: This web page helps educators find information, strategies, and tools to promote engagement in inquiry-based learning. It includes downloadable tools and resources used by practitioners at schools with successful inquiry-based practices to help educators see these practices and strategies in action.
- [Share My Lesson](#), American Federation of Teachers: This website provides a wide variety of project-based learning lessons developed by American Federation of Teachers (AFT) members in collaboration with AFT staff. Resources for practitioners to download include many ideas for project-based learning across subjects areas.
- [Youcubed](#), Stanford Graduate School of Education: This website provides educators with resources to teach math in creative and inquiry-based ways that make it powerful and accessible for all learners. Resources include tasks by grade and topic, a list of key research, and online courses for educators and students.

School Models Focused on Deeper Learning

- [All Learners All the Time: Project-Based Learning and Equity in the Internationals Network](#): This learning brief provides examples of project-based learning through the Internationals Network as well as information about how project-based learning can be effective for multilingual learners.
- [Big Picture Learning](#): Big Picture Learning works with districts and school leaders to design schools that immerse students in interest-based learning experiences. These learning experiences are grounded in personalized courses of study and workplace learning opportunities that are supported with advisories, among other personalized structures, that strengthen relationships.

- **High Tech High:** High Tech High is a charter school network that services over 6,000 students in grades K–12. Network schools maintain a learner-centered model that immerses students in project-based learning and supports students through structures that foster trusting and caring relationships. The High Tech High organization also has a Teacher Credentialing Program and the High Tech High Graduate School of Education, offering professional development opportunities serving national and international educators.
- **Linked Learning Alliance:** The goal of this website is to connect all youth to college, career, and purpose by supporting educators, employers, and communities to establish accelerated, seamless learning experiences that lead to meaningful credentials and careers. Their website includes a resource library.
- **New Tech Network:** New Tech Network partners with school districts to support comprehensive school change centered on the implementation of interdisciplinary, project-based learning. To do this, the network engages district officials and practitioners in professional development that helps them build schools that implement project-based learning and consider how to spread this deeper learning model to other schools through a supportive policy and personnel infrastructure.