Lessons from
Five High Schools

Time *for* Deeper Learning

NATIONAL CENTER ON
TIME & LEARNING

Time *for* Deeper Learning

LESSONS FROM FIVE HIGH SCHOOLS

Contents

The high aspirations we hold for our young people means we need schools to prepare them well to face the complex challenges of today's world.

Why Deeper Learning?

Educating students to succeed
in a changing world

We all want our children to succeed. Although we can hardly imagine how the complex global economy will be shaped and reshaped by the forces of change in the coming years, we know that young people's future success is likely to be determined by their ability to compete—not just for their first job, but throughout their lives. Yet our hopes and plans for the rising generation are broader than economic success: We want tomorrow's adults to be inspired leaders who will solve society's pressing issues, civic contributors who will build their communities, and secure family members who will nurture the generations that follow. Our aspirations are high. What skills and knowledge will our young people need to meet them? How can schools best prepare today's students to do well in our complex world?

Over the course of 2009, the California-based William and Flora Hewlett Foundation, which has been making education-related grants since 1967, completed months of research and analysis focused on these key questions. The foundation's research included more than 100 interviews with leading thinkers in the fields of education, business, and public policy. The Hewlett team found, as Education Program Director Barbara Chow noted in an October 2010 *Education Week* article, "schools to make your heart sing and others to break it...classrooms where the teachers and students did not say a single word for an entire class period and others where the din of questions and energy of learning were palpable."[1]

This intensive process led the Hewlett Foundation to forge a new direction for its education grant-making—a focus on "deeper learning." As defined by the foundation, deeper learning includes five key elements working in concert:

→ MASTERING CORE academic content: Students develop a baseline set of disciplinary knowledge. This knowledge includes facts and theories in a variety of domains—and the language and skills needed to acquire and understand this content.

→ THINKING CRITICALLY and solving complex problems: Students know how and when to apply core knowledge by employing statistical reasoning and scientific inquiry to formulate accurate hypotheses, offer coherent explanations, and make well-reasoned arguments, along with other skills. These critical thinking skills also incorporate the use of creativity in analyzing and solving problems.

→ WORKING COLLABORATIVELY: Students cooperate to identify or create solutions to societal, vocational, and personal challenges. This cooperation includes the capacity to organize people, knowledge, and resources toward a goal and to understand and accept multiple points of view.

→ COMMUNICATING EFFECTIVELY: Students understand and transfer knowledge, meaning, and intention. This understanding involves the ability to express important concepts, present data and conclusions in writing and to an audience, and listen attentively.

→ LEARNING HOW TO LEARN: Students will know how to monitor and direct their own work and learning.[2]

These deeper learning skills are similar to sets of skills—known as 21st-century skills, soft skills, complex skills, or higher-order skills—that have been identified by various education reform stakeholders as essential, though too often lacking, in public education. Consequently, a broad movement to support educational programs and strategies that foster these skill sets has been gaining momentum in the past several years. Reflecting and furthering this momentum, in July 2012, the National Research Council (NRC) released *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. The report, authored by an interdisciplinary committee, validated the importance of deeper learning and called for the federal government, states, and education philanthropists to support additional research, policies, and programs to expand deeper learning. Specifically, the report noted the need to ensure that the forthcoming assessments of the Common Core language arts and mathematics state standards (CCSS) and the eventual Next Generation Science Standards measure students' deeper learning skills and knowledge.

Since the launch of its deeper learning strategy, the Hewlett Foundation has supported research on promising pedagogical approaches to deeper learning skills, curricula development and dissemination, new assessments, professional development for teachers, supportive technology, and other key innovations to help explore and expand schools' capacities to teach deeper learning skills. The foundation also has identified and provided support to several networks of high-performing charter schools and traditional public schools that engage students in deeper learning experiences.

To achieve the significant aim of sharing the best practices of high-performing, deeper learning schools and extending these practices to the education mainstream, we must understand and document how these schools create the specific conditions and broader climates that make deeper learning possible. One of the most important and obvious of these conditions is the need to allocate sufficient time to activities and lessons that foster deeper learning. Time is one of the fundamental resources that educators have at their disposal. How schools allocate time can determine how successful they will be in achieving their goals for their students.

To extend the education practices of high-performing deeper learning schools into the mainstream, we must understand and document their conditions and climates.

The National Center on Time & Learning (NCTL) is dedicated to helping schools expand learning time to improve student achievment and maximize their success. For this report, the Hewlett Foundation provided support to NCTL to examine the role of time and the decisions made concerning time usage and allocation, as educators teach deeper learning

skills at five high schools, located in diverse settings ranging from the Bronx, New York, to San Diego, California. *Time for Deeper Learning: Lessons from Five High Schools* does not focus solely on expanded-time schools. Rather, the study's purpose is to examine how schools that prioritize deeper learning are using whatever time they have available—whether through an expanded day or during a traditional school schedule—to reach their educational goals.

STUDY METHODOLOGY

The five schools that NCTL examines in *Time for Deeper Learning* (four high schools and one school serving grades 7-12) each belong to a different network that have all received support from the Hewlett Foundation for their commitment to deeper learning. Presented in alphabetical order, the schools featured in this report are:

→ AVALON SCHOOL in Saint Paul, Minnesota (a 7th–12th grade charter school in the EdVisions Schools network)
→ CODMAN ACADEMY CHARTER PUBLIC SCHOOL in Dorchester, Massachusetts (a 9th–12th grade charter school in the Expeditionary Learning network)
→ HIGH TECH HIGH MEDIA ARTS (HTHMA) in San Diego, California (a 9th–12th grade charter school in the High Tech High network)
→ INTERNATIONAL COMMUNITY HIGH SCHOOL (ICHS) in the Bronx, New York (a 9th–12th grade New York City public school in the Internationals Network for Public Schools)
→ NEW TECH HIGH AT ARSENAL TECH in Indianapolis, Indiana (a 9th–12th grade Indianapolis public magnet school in the New Tech Network)

Across the five profiled schools in this report the percentage of low-income students (i.e., individual students who are eligible for free or reduced-price lunch according to federal guidelines) varies. The schools' low-income populations range from a low of 33 percent to a high of 82 percent. International Community High School (ICHS) is the only one of the five that serves a large percentage of students (100 percent) whose first language is not English. Several of the schools have more than 20 percent of their students receiving special education services. Students in four of the schools outperformed their surrounding districts on recent English language arts (ELA) and math assessments, while ICHS students outperformed the English language learner (ELL) population in New York City in both subjects.

To produce *Time for Deeper Learning*, the authors conducted background research on each school; went on site visits to the five locations; interviewed network leadership, along with students, teachers,

administrators, and external partners there; and also conducted follow-up interviews. The following questions guided our work:

- → HOW ARE student time and teacher time in each school designed to promote the acquisition of deeper learning skills?
- → HOW IS time allocated and used differently in these schools in comparison to time allocation at more traditional schools?
- → WHAT PRIORITIES drive the design of learning time at each of these deeper learning schools?
- → WHAT ARE the ongoing challenges related to time and deeper learning in these schools?
- → WHAT INSIGHTS can the time design strategies used by these schools offer to other schools that aim to increase their focus on teaching deeper learning skills?

Time for Deeper Learning presents five case studies that take an inside look at these individual schools to highlight ways that each organizes, allocates, and uses time to support the acquisition of deeper learning skills. Following these profiles, we examine common themes that emerge from across the schools and identify five main priorities that drive the design of time in each of these settings. Then, in the final chapter, we explore the challenges facing deeper learning schools as they endeavor to optimize the management of time to meet their goals and to address the implications of our findings for all schools that strive to increase their students' success through deeper learning.

ST. PAUL, MINNESOTA
A member of EdVisions Schools network

Personalized Learning

Giving students control and responsibility for their own growth as learners

Wedged among the warehouses of St. Paul's railroad district, Avalon School is unique. Founded in 2001 by a small group of parents and educators, Avalon gives its 190 students in the seventh through twelfth grades almost free rein to discover and learn according to their own individual interests. Instead of following a prescribed curriculum, Avalon students work closely with their teachers—officially referred to as "advisors"—to develop and pursue personalized learning plans (PLP). Student-directed, project-based learning is at the core of Avalon's pedagogical approach and the primary means for fostering students' deeper learning skills. Student projects are scored not only on mastery of state standards, but also for their demonstration of skills that are harder to quantify—such as creativity, problem solving, decision making, time management, information gathering, responsibility, and collaboration. As one student attests, "At Avalon, it's all about students taking control of their education, finding value in what they're learning, and really going after their passions. This leads to students being more engaged and excited about their learning."

Avalon is a public charter school affiliated with EdVisions Schools, a non-profit educational development organization that promotes small, teacher-run schools that provide students with a supportive learning environment and highly personalized learning experiences grounded in student-directed,

→ **Each student's day is organized around an individualized mix of self-guided projects and classes outlined in a learning plan.**

project-based learning. Any student who is from the Minneapolis–St. Paul metropolitan area can apply to Avalon, and to date, all students who have applied before the application deadline have been admitted. Avalon's student body is more affluent than the St. Paul school district where it is located: In 2011, 33 percent of Avalon's students qualified for free or reduced-price lunch, compared to 73 percent of students currently attending surrounding schools in the district. Avalon does have a much higher population of special education students than do surrounding areas: Twenty-eight percent of Avalon students receive special needs services, compared to 15 percent of students statewide and 18 percent in St. Paul.

Avalon students also perform well comparatively, as 60 percent of these tenth graders scored proficient or higher on the state reading test, vs. 53 percent of St. Paul school district tenth graders and 75 percent of tenth-graders statewide. Also, 58 percent of the school's eleventh graders scored proficient or higher on the state math test, compared to 28 percent of eleventh-grade students in the St. Paul school district and 48 percent of eleventh graders statewide. (For high school, the state only assesses tenth graders in reading and eleventh graders in math.)

HOW AVALON ORGANIZES STUDENT TIME

The Avalon school day runs from 9 AM to 3:40 PM Monday through Friday for 35 weeks, September through June. While the lengths of the student school day and academic year at Avalon are nearly identical to those of surrounding district schools, the way time is organized during the school day is entirely different. The daily schedule features two group Advisory periods, five one-hour work periods, and a 30-minute reading period. First thing every morning, students gather in their Advisories for a 20-minute "check-in." These student Advisories are

a key strategy for fostering close relationships among students and between students and their advisor(s). As Kevin Ward, an Avalon advisor explains:

> We use Advisories for students to talk about topics that interest them and to share ideas. Sometimes we can be silly, other times serious. We use a talking piece and pass it around so that each student may speak and contribute to the day's check-in, which can be as simple as "What is your favorite color?" and as complex as "What's a commonplace event that changed your life in a serious way?" Through Advisory, students learn more about each other and how to work together.

Each student is placed in a multi-age Advisory group of 18–20 students in their first year at the school. These groups remain consistent for the entire school year, and most students remain with the same Advisory group throughout their Avalon experience. Students also receive individual academic and social-emotional support from their advisors during the work periods.

After the morning Advisory, ninth- through twelfth-grade students either attend seminars or

Avalon School at a Glance	
Principal	School is governed by a teacher co-operative
Student Population	
Grades served	7 – 12
Number of students	181
Qualify for free/ reduced-price lunch	33%
Qualify for special needs services	28%
English language learners	3%
Students Scoring At or Above Proficient on the Minnesota Comprehensive Assessments in 2011 (difference compared to surrounding district)	
ELA	60% (+7%)
Math	59% (+31%)

Sample Avalon Student Schedule

8:00 – 9:00	Building opens for students (homework help)
9:00 – 9:20	Advisory
9:20 – 10:20	Seminars or Project Work
10:20 – 11:20	Seminars or Project Work
11:20 – 12:20	Seminars or Project Work
12:20 – 1:00	Lunch
1:00 – 1:30	Reading time
1:30 – 2:30	Seminars or Project Work
2:30 – 3:30	Seminars or Project Work
3:30 – 3:40	Advisory

work on independent projects. These students do not follow a class schedule in the typical sense—each student's day is organized around a personalized mix of self-guided projects and seminar classes outlined in the student's personalized learning plan (PLP). Developed jointly by students and their advisors based on state academic standards as well as Avalon's additional graduation requirements that are focused on deeper learning skills, PLPs outline a student's course of study over his/her four years of high school. An individual PLP includes student-initiated independent projects, seminar classes, and public student presentations. Avalon students spend the majority of their time designing, implementing, and completing independent projects. These projects can be any length and can focus on almost any topic, as long as the project requires the student to demonstrate mastery of state academic standards.

For example, in the 2011–12 school year, a ninth-grade student chose to create her own children's book as a project. After meeting with her advisor to determine what state academic standards she planned to master by creating the book, the student developed a timeline of tasks to complete it, including gathering her favorite children's books for ideas, writing a draft of the story, and creating the illustrations. Several revisions later, this ninth grader had written and illustrated her own children's book. By writing several drafts of the book that incorporated feedback from her advisor and designing a book for a specific audience, she demonstrated mastery of two state standards—the writing process standard and the audience and purpose standard for writing. She also worked with an art teacher to create artistic effects for the book, and in doing so, earned the arts creation and performance standard as well.

Kevin Ward offers further context:

High school-aged students have almost total flexibility to schedule their day so that they can work on their projects. They spend most of the day in their advisory room working. Some students will check in with their advisor throughout the day, while others will just go at it.

Students schedule one-on-one check-ins with their advisor at least once a week, with some students checking in every day. During check-ins, which last 5 to 15 minutes, the teacher-advisor either helps the student to develop new projects and/or provides academic and project management support.

When students are not working on projects, they are attending seminar classes, which are similar to traditional high school classes. Seminar classes are taught in 60-minute periods, primarily with lectures, group discussions, readings, and independent or group assignments. While many seminar classes incorporate projects as well, these projects are developed by the instructor. Each seminar class is taught two to three times per week for one block of the year, with the exception of math seminars, which meet daily for the entire year and follow a set curriculum. Students are not required to take math seminars but many do so, because they find it easier to learn math concepts through a structured curriculum. Many students also take science seminars for the same reason. For example, students can choose to earn a particular biology standard by taking a seminar focused on ecology, evolution, cell design, genetics, or anatomy, all of which are specific state biology standards that students must master in order to graduate.

Students also can take seminars that combine state standards from multiple subject areas. In the seminar "This Avalonian Life," for instance, students learn how to use podcast software to create their own documentary pieces about their school in the style of the National Public Radio program *This American Life*. This course combines technology standards with some language arts standards. Generally, students attend two seminars each day and are exposed to four or five different seminars per week. Examples of other seminars include geometry, physics, constitutional law, world history, chemistry, and economics.

Avalon students select which seminars to take with the help of their advisors. Individual students may choose to take a seminar class either because they are interested in the topic or because they feel that the seminar will be more manageable or exciting than doing an independent project on that topic. However, advisors encourage students to design

The Avalon Senior Project: Student-Directed

Avalon School requires all seniors who have fulfilled at least 30 credits to complete a 300+ hour senior project. Through this endeavor, twelfth graders hone their deeper learning skills by completing an in-depth exploration of a topic about which they are passionate. Because the school's seniors are given almost complete freedom to choose what they want to study, they must develop project proposals that articulate clear learning goals and questions they wish to answer. These students learn how to write project proposals during a three-day senior retreat in mid-September, facilitated by senior advisors. In October, each of the seniors writes a formal project proposal, which must be approved by his/her advisor, the student's parent(s) or guardian(s), and a community expert—an adult in the community who is an expert, or has relevant experience, in the chosen field. Each senior collaborates with a community expert to develop and complete the project, giving the senior valuable real-world experience before graduation. While most seniors are already skilled project managers, they continue to check in with their advisors periodically to discuss ideas, receive feedback, and ensure that they are on track to completing the project on time.

The senior project culminates in May, when each graduating student gives a 25-minute presentation of his/her project results to Avalon staff and students, parents, and members of the community. After the presentation, each senior meets with his/her advisor to assess the project using a rubric that outlines the specific learning goals students set in the initial project proposal.

On this page, at right, are brief descriptions highlighting two examples of senior projects from the 2011–12 school year.

"The Influence of the Stage" by Leland T.

For his senior project, Leland focused on theater production. As he explained to the audience during his final presentation, Leland was already involved in theater outside school, performing in many local productions, but he had never explored the entire production process until his senior year. To learn about the intricacies of theater, this senior analyzed several plays, gaining a better understanding of playwriting as he took classes on stagecraft at Hamline University. Like many such endeavors, Leland's project evolved over time, allowing him to make unexpected discoveries. "I learned that you can educate people about social issues through theater, which I did not expect when I first started the project," Leland tells the audience during his presentation. This insight led him to produce, direct, and perform in adaptations of "The Yellow Wallpaper," by Charlotte Perkins Gilman, and "How I Went Out to Service," by Louisa May Alcott, both for the Avalon community. Leland built a stage-set for the plays, using the knowledge and skills he attained through studying stagecraft at Hamline, and he collaborated with Craig Johnson, a professional theater director, to enhance the quality of his Avalon theater productions. As Leland attests, "Through this project I learned perseverance, communication, and collaboration."

"Changing the Future Through Education Reform: One Student at a Time" by Holly

Holly spent most of her senior year—over 800 hours—working with members of the non-profit educational advocacy organization Education|Evolving, to pass new legislation in Minnesota that would create and expand individualized learning programs within schools. Holly's interest in individualized learning had grown from her own experiences attending both traditional public schools and Avalon. The considerable differences she came to recognize between the two schools' educational approaches inspired Holly to propose a senior project focused on expanding opportunities for young people to experience individualized learning. For the project, Holly read several books examining the shortfalls of the current education system and ways it could be improved. She also collaborated with education reformers and legislators to think of creative solutions that might improve the current system, and she testified before three legislative panels on behalf of the bill, strengthening her communication and presentation skills. In May 2012, the bill, titled "The Improved Achievement through Individualized Learning Act," was passed. This new law will "expand and improve student achievement through the creation of opportunities for individualized learning and encouragement of schools to introduce and expand individualization."[3]

In addition to gaining valuable real-world experiences and sharpening her communication and collaboration skills, through her project, Holly discovered her passion for the political realm. As she reflects on her efforts: "Eighty percent of my time was spent on this one project and it became my entire senior year experience. What the project allowed me to do was really expand my professional side and to discover that public policy and political science are really the track I want to take. This was different, because at the beginning of the year I was planning to go to school to continue my career with the National Park Service. And so, the project really changed my view of things."

Examples from EdVisions Schools
Design Essentials

Small Learning Community:
- Small learning communities of 150 students
- Highly personalized settings; every student treated as an individual
- Positive, caring relationships; respect and responsibility modeled and practiced
- Multi-age, full-time Advisories in place; each advisor has no more than 20 assigned students
- Mentoring available to all students
- Parents and community at-large actively engage with students to support learning
- Students experience value of citizenship as they contribute to greater community

Self-directed, Project-based Learning:
- Self-directed, project-based learning is the primary pedagogical approach
- Personalized Learning Plans (PLP) for all students emphasizing student needs and interests
- Personalized work space for each student with Internet access
- Technology-infused environment; technology used as tool
- Individual/group projects complemented by multiple teaching and learning approaches based on student needs and interests
- Achievement demonstrated publicly
- All students prepared for post-secondary education, the workplace, and active citizenship
- All students and staff engage in quiet reading every day

Authentic Assessment:
- Assessment of projects by more than one adult, with opportunities for students to improve products to meet quality standards
- Demonstrated achievement, with public presentations including community involvement
- Standardized testing, with results informing PLPs and continuous improvement

The student-advisor check-ins provide additional support to ensure that Avalon students stay on track.

In addition to Advisory and independent work periods and seminars, students read for 30 minutes every day after lunch. Says Kevin Ward:

> We believe that sustained silent reading helps calm our students down after lunch. We also just believe in reading and see it as a critical component in students' learning.

At the end of each school day, students log the time they dedicate to each project into an online project management system. This system holds students accountable for how they spend their time throughout the day. The time logs are also used to show the state how students allocate their time. Although Avalon students are required to document the time they spend on each project, they earn graduation credits for their projects based on the quality of their work, not based on how long it took to complete a project. Students must earn 10 credits per year by completing projects and/or passing seminar classes. Each credit represents roughly 100 hours of work, either in a class or on a project.

Students also return to their Advisory groups for a 10-minute check-out before they leave school. During this brief period, advisors may remind students of upcoming deadlines and events or open the room for discussion about how the day went. As Ward describes:

> We like to check-out as a fun way to come together and remind ourselves that we're still an Advisory no matter what happened during the day. It's also a time when we celebrate projects being completed and students' birthdays.

Other educational opportunities take place throughout the school year as well, such as monthly presentation nights and a service-learning week. The event nights allow students to demonstrate their honed presentation skills as they share their completed projects to staff, students, parents, and community members. At Avalon, students are required to present a project on at least one night of the school year.

Every May, the entire school community engages in a service-learning week, where each Advisory works on a community service project. Projects provide tangible benefits to the school and community, while also catalyzing strong student relationships and sense of belonging. As one twelfth-grade student reflected:

> Service-learning week is a great way to bond with your Advisory. It helps you come together, and it feels good to be helping people alongside your fellow students and friends.

HOW AVALON ORGANIZES TEACHER TIME

Avalon is operated as a teacher cooperative with no administrative staff, so the teaching-advisory staff share all

projects as often as possible and to only take seminar classes when necessary.

Avalon's schedule and project-based approach are designed to enable students to develop the deeper learning skills that are crucial for post-secondary success. Self-directed projects give students the latitude to determine how they will master state graduation standards while pursuing topics of their interest. Avalon's schedule provides the time and flexibility for students to conduct in-depth research, think critically, create unique products, present their findings to an audience, and reflect on what they learned, how they learned it, the skills they developed, and what they would do differently next time.

"Service learning week is a great way … to be helping people alongside your fellow students and friends."

administrative duties. Avalon advisors are required to work an eight-hour day Monday through Friday. On Mondays, Tuesdays, and Fridays, advisors arrive to school in three different waves separated by 15 minutes. The first wave of advisors arrives at 8 AM and leaves at 4 PM, and the last wave arrives at 8:30 AM and leaves at 4:30 PM. This staggered schedule allows students to come early or to stay late for homework help. On Wednesdays, all advisors are required to arrive at 8 AM to participate in a one-hour meeting focused on instruction and pedagogy. On Thursdays, all faculty and staff are required to arrive at 7:45 AM for a 75-minute meeting focused on school operations. According to Kevin Ward, an English advisor who also acts as the school's program coordinator, the emphasis on Wednesday is clear:

> During the teacher meeting we focus on getting better as teachers. The other meeting includes the entire school staff and is focused on operations, such as expectations from the state, meeting the requirements we have for running the school, and events that we need to plan.

High school advisors teach one seminar class per quarter and middle school advisors teach two seminar classes per quarter, with each of their classes meeting two to three times per week. When advisors are not teaching seminars, they are advising students on their projects, planning for their seminar classes, or carrying out their administrative duties. On a typical day, advisors will meet with three to six individual students for 5 to 15 minutes each, depending on the support needed. Although advisors do not have scheduled planning periods, they typically spend 30 minutes to an hour per day either independently planning or collaborating with other advisors. Most teachers (advisors) plan either before or after the school day.

ABOUT EDVISIONS SCHOOLS

EDVISIONS SCHOOLS IS A NON-PROFIT EDUCATION development organization with a network of about 60 schools spread across the United States. Emphasizing small, supportive learning environments, EdVisions focuses on providing students with highly personalized learning experiences through student-directed, project-based learning. Each EdVisions student has a Personalized Learning Plan (PLP) that captures his/her individual needs and personal interests, and students are paired with teacher-advisors who provide daily academic and socio-emotional support. EdVisions assists sites during the school development process and offers on- and off-site coaching to ensure successful implementation of what the network calls "Design Essentials."

Avalon School Graduation Requirements

GRADUATION STANDARDS ARE THE ACADEMIC credits students earn at Avalon. In order to graduate from Avalon, students must study the same academic subjects required by any other public school in Minnesota. However, through its charter, Avalon re-wrote many standards so students could more easily interpret the content and do projects in each of the subject areas.

- → 3 ARTS standards
- → 13 CAREER and technology standards (9 career, 4 technology)
- → 12 HEALTH and physical education standards (8 health, 4 PE)
- → 54 LANGUAGE arts and reading standards (27 reading and literature, 27 writing)
- → 4 MATH courses (algebra, algebra II, geometry, advanced math topics, etc.)
- → STUDENTS MUST complete 16 of 24 science standards (3 nature of science and engineering, 5 biology, 2 chemistry, 2 earth and space science, 2 physics, 2 physical science)
- → 31 SOCIAL studies standards (5 economics, 3 geography, 4 U.S. government and civics, 10 U.S. history, 9 world history)
- → 5 WORLD languages standards

Other requirements

SENIOR PROJECT
Students will develop, complete, and present an effective senior project with all elements of a quality project authentically embedded within the project.

SERVICE LEARNING, 4 years
Students will participate in a short-term active service learning experience within the school community every year and reflect on the experience.

> "We want to instill the habits of learning into as much of our students' lives as we possibly can."

MEG CAMPBELL,
Executive director and founder, Codman Academy

BOSTON, MASSACHUSETTS
A member of the Expeditionary Learning Schools network

Blending Academics and Life Skills

Engaged learning inside the classroom and across the community

Meg Campbell, executive director and founder of Codman Academy Charter Public School, describes her philosophy on time as "spongy"—meaning that time in school should absorb many hours of her students' days. With weekdays that can start at 7:00 AM for physical education and extend through 6:00 PM for after-school tutoring; school years that are 15 days longer than the state-mandated 180-day calendar, 3-hour classes on most Saturdays, and required summer programs, Codman is in fact very "spongy" on time. There is a goal behind the enormously rigorous and time-consuming schedule that Codman requires of its students. As Campbell puts it, "We want to instill the habits of learning into as much of our students' lives as we possibly can."

The approach has produced marked results. All of Codman's graduates over the past 11 years have been accepted to college. The school's 145 students—98 percent students of color; 69 percent from low-income families; 22 percent with a first language other than English, and 23 percent receiving special education services—turn in consistently solid performances on state standardized tests. In 2011, every tenth grader passed the state English language arts; and math tests required to graduate, with 90 percent proficient or higher in ELA and 73 percent proficient or higher in math. Measured by the Massachusetts "Student Growth Percentile," which compares students' test performance with that of other students with similar testing
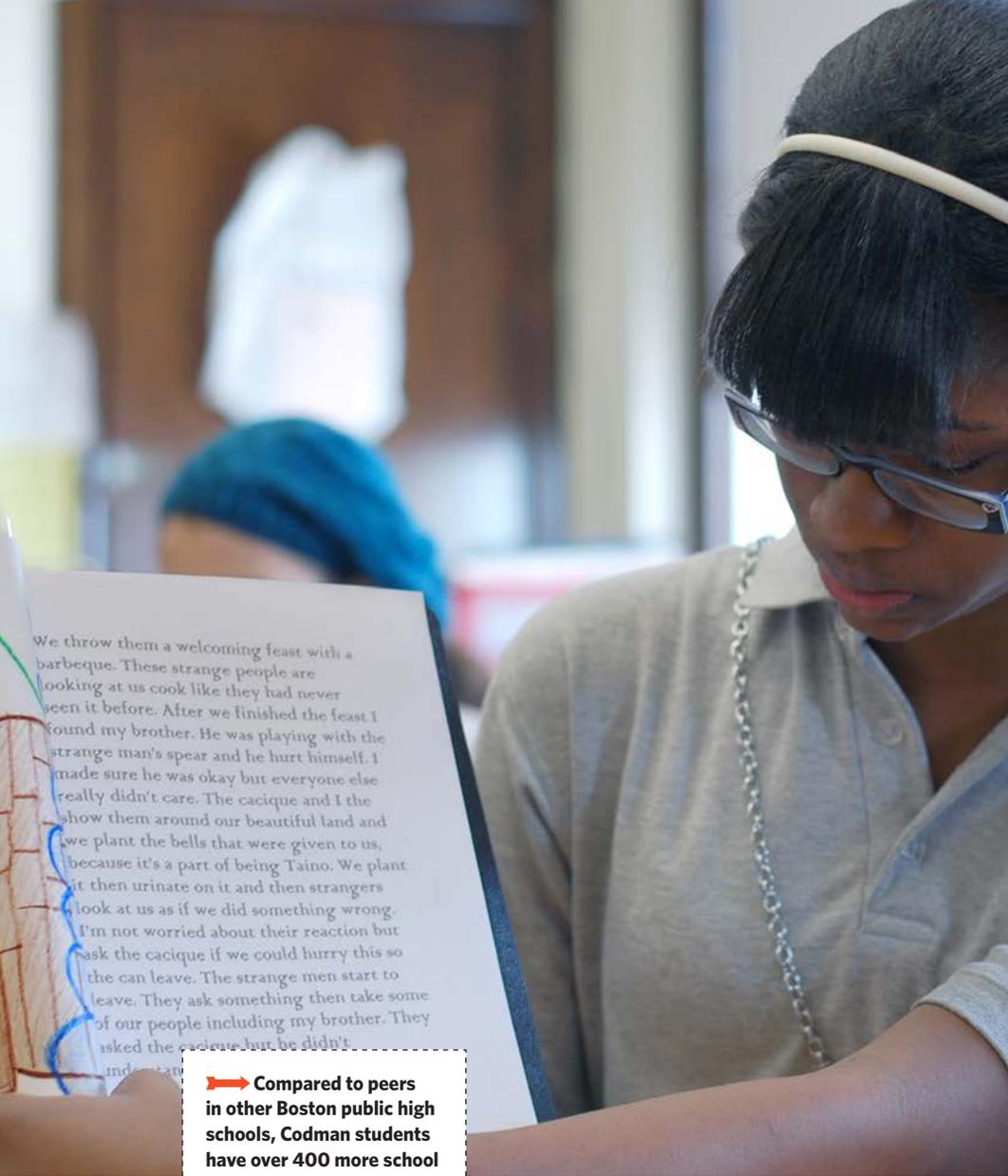
➡ Compared to peers in other Boston public high schools, Codman students have over 400 more school hours every year.

Codman Academy at a Glance	
Principal	Thabiti Brown
Executive Director	Meg Campbell
Student Population	
Grades served	9 – 12
Number of students	149
Qualify for free/ reduced-price lunch	69%
Qualify for special needs services	23%
English language learners	1%
Students Scoring At or Above Proficient on the MCAS Test in 2011 (difference compared to surrounding district)	
ELA	90% (+17%)
Math	73% (+8%)

histories, in 2012, Codman students' performances in ELA were among the top 2 percent of all high school students in the state and their performances were among the top 1 percent in math.

As important as the school's leaders consider these academic results, they are only one part of the overall picture. Codman Academy is a member of the Expeditionary Learning (EL) schools network, which strives to produce students who have "skills critical to college readiness and lifelong success—literacy, numeracy, problem solving, critical thinking, collaboration, creativity, persistence toward excellence, and active citizenship—as well as mastery of subject-area knowledge."[4]

Founded in the early 1990s with 10 demonstration schools, the EL network now includes 165 schools throughout the country. The EL approach to pedagogy is built around students and teachers participating in learning "expeditions," case studies, projects, fieldwork, and service learning connected to the world outside the classroom and framed within a college preparatory curriculum. Attention to student

acquisition of deeper learning skills is prevalent throughout this approach. According to the *EL Core Practices Handbook*: "When implemented robustly, the Expeditionary Learning core practices create school environments that promote deep engagement in learning and support students to achieve at high levels."[5] The goal is to inspire students to think and work as professionals, contributing high-quality work to settings beyond their own classrooms.

HOW CODMAN ORGANIZES STUDENT TIME

As a charter school, Codman has the autonomy to set the length of its school day and year. School opens at the end of August and ends in mid-June, running three weeks longer than the conventional

Sample Codman 10th Grade Schedule

Monday, Tuesday, Wednesday

9:00 – 10:30	Math
10:30 – 12:00	Science
12:00 – 12:30	Lunch / Crew 1 (Clubs on Wednesdays)
12:30 – 1:00	Lunch / Crew 2 (Clubs on Wednesdays)
1:00 – 3:00	Humanities
3:00 – 4:00	Work Block / Study Hall
4:00 – 5:00	Academic Enrichment Block

Thursday

9:00 – 10:00	Community Circle
10:00 – 11:00	Math
11:00 – 12:00	Science
12:00 – 12:30	Lunch / Crew 1
12:30 – 1:00	Lunch / Crew 2
1:00 – 3:00	Humanities
3:00 – 4:00	Work Block / Study Hall
4:00 – 5:00	Academic Enrichment Block

Friday

1:00 – 5:00	Service Learning – math and science focus

Alternative Friday

9:00 – 4:00	Service Learning – Huntington Theatre program

science separately—for example, the math progression is Algebra I (grade 9), Geometry (grade 10), Algebra II (grade 11), and Pre-Calculus or Calculus (grade 12), all taught in 60– or 90–minute blocks. Eleventh and twelfth graders also take language courses (in 1-hour blocks). Also, all students participate in "Crew"—Codman's version of student advisory—for 30 minutes on Mondays, Tuesdays, and Thursdays. Finally, Thursday mornings from 9:00 AM–10:00 AM are devoted to what's called "Community Circle," featuring student-run shows that spotlight informational skits, awards, student presentations, and guest speakers. Classes on Thursdays are shortened to accommodate Community Circle time.

Fridays at Codman have a special schedule. On alternative weeks, all students engage in "fieldwork," from either 9:00 AM to 4:00 PM or from 1:00 PM to 5:00 PM. Fieldwork includes service-learning projects or other academically focused work that takes the students out of the classroom. For example, students may develop literacy skills by studying the text of plays with the actors performing these works in a local professional theater.

On Saturdays, in the fall and spring trimesters, all Codman students are required to attend school from 9:00 AM to noon. Underclassmen receive tutoring through the Tutors for All program, which taps college work-study students to provide individualized, skill-based tutoring focused on achieving state standards in mathematics and English language arts. Meanwhile, juniors and seniors choose from a set of electives taught by adjunct school faculty and working professionals, including marine biology, poetry, watercolor painting, sailing, money management, journalism, and moot court.

To graduate, Codman students are also required to complete two summers of a program approved by the school's faculty, along with a two-week, full-time junior internship offsite (Most students complete a two-week internship during their senior year as well.) Codman also takes the entire school—all students, faculty, and staff—on a three-day retreat to New Hampshire every October, where students and staff live in cabins with their Crew. For a majority of students, this is their first time experiencing a camp

schedule in Massachusetts. At Codman, the core school day runs from 9:00 AM–5:00 PM Monday through Friday and from 9:00 AM to noon most Saturdays. Codman students log 8 hours per week more than the typical Boston Public Schools high school student, who attends school from 7:40 AM to 2:00 PM Monday through Friday. Codman's leaders point to the longer school day and year as essential for them to successfully implement EL's core practices and ensure that their students—many of whom enter several grade levels behind on basic literacy and math skills—meet state academic standards.

From ninth through twelfth grade, students take a daily two-hour block of integrated history and English language arts called "Humanities," with a curriculum is connected thematically across four years. Students also take a laboratory science class that meets from 5–7 hours per week all four years of high school. Students take 1–1.5 hour blocks in math and

environment and its accompanying challenges. Activities focus on self-awareness, self-reflection, enhancing group effectiveness, and positively influencing the school culture. During the retreat, every person—from the director to all students—publicly sets his or her intentions for the coming year—a tradition that Executive Director Meg Campbell, describes as a "leveler" among school leadership, faculty, and students. "We are all in process here, trying to become better human beings. The kids love to remind me of my intentions!" Campbell, who is also the school's founder, says.

Across its varied disciplines, the Codman curriculum emphasizes social justice and is centered on learning "expeditions," which are the long-term, interdisciplinary projects that stand at the core of the school's approach. To complete expeditions, students engage in original research, critical thinking, and problem solving on a range of issues in collaboration with one another, their teachers, and outside professionals and experts.

In addition to expeditions, the curriculum connects to the world outside the school—sometimes addressing issues concerning the local neighborhood, sometimes exploring issues with global impact. Service learning, required internships and summer programs, and deep partnerships with community-based organizations immerse Codman students in their communities. Campbell offers the rationale:

> We want students to find their passion, and we will help. We want them to make a habit of learning for its own pleasure. We take that seriously and put resources into it—staff resources in matching kids with programs and in running our own programs. And these efforts pay off: Often, a young person will get jolted by a summer experience and then come back completely transformed and eager to learn more.

HOW CODMAN ORGANIZES TEACHER TIME

Codman teachers are required to work 8:30 AM to 5:00 PM, Monday through Friday, during the school year, which equals 2.5 hours more per day than the requirement for Boston Public Schools teachers. Providing time for teachers to meet and collaborate is a priority for Codman. Every other Friday, the school day for students begins at noon, allowing teachers to meet as a whole faculty, and then as grade teams for a total of 3 hours, before the students' arrival. The

Learning "expeditions" are long-term, interdisciplinary projects that entail research, critical thinking, and collaboration.

planning and preparation periods for most grade-level groups of teachers are scheduled to coincide, providing an additional 1.5 hours per day of meeting time. Many teachers in the same grade-level group have adjacent offices, creating more opportunities for informal collaboration and relationship building.

Codman faculty participate in three to five full professional development days during the school year (the students are off on those days), as well as one full week reflecting and planning together at the end of the school year and two weeks of planning and professional development as a full faculty at the beginning of August. All of this time is required in the teachers' contract. According to Codman Principal Thabiti Brown, "We invest in teacher time. It is an intentional strategy to get all the teachers on the same page, so we have a stronger shot at meeting the needs of the kids."

At a recent full-faculty meeting, Campbell checked agenda items off her list, as she addressed the 30 faculty and staff members crowded into one of the school's basement classrooms. The group had already discussed issues both heady and mundane, such as: How to create a disciplinary system that reinforces, instead of conflicts with, the school's democratic principles; how to recognize students' positive

Developing Literary Analysis, Critical Thinking, and Communication Skills through Drama

FOR CODMAN, IT IS A PRIORITY THAT STUDENTS master core academic content in English language arts (ELA) and history, develop the skills and self-assurance they need to present themselves well in a variety of contexts, and "find their own voice" throughout this process. This is the main reason why Campbell reached out to Boston's Huntington Theatre to seek a partnership at the time of the school's founding in 2001. As she wrote:

> I scoured the research to see what might accelerate my students' literacy. I found that there is one area of arts education that does have a positive impact on test scores: drama. So, I approached the Huntington to co-develop a high school language-arts curriculum based primarily on plays. Plays are predicated on making sense of text, and this is exactly the skill our students need to master. Plays do this with fewer words on the page, so they are immediately more accessible for less skilled and therefore less confident readers.[6]

Codman students develop the skills and self-assurance they need to present and to find their own voice.

Campbell's letter resulted in the development of the *Literacy Through Theatre* program, now an 11-year collaboration between Codman and the Huntington, and recognized in 2009 by the Massachusetts Cultural Council through its Commonwealth Award for Creative Learning, given to *"an individual, school, or cultural organization that has demonstrated the importance of creativity and innovation to student achievement and success."*[7]

Thabiti Brown, who was the school's founding humanities teacher and is now the principal of Codman, explains the goals and the approach of the partnership in a written summary of the program:

> Our short-term goal in humanities (interdisciplinary English language arts and history) is to get students up to grade level in the basic skills necessary for success: reading, writing, and thinking about texts. We believe we can better engage students with a text by first gaining their interest through discussions and activities geared to helping them understand the text. Our 'in,' then, is to engage the supply side of learning: We increase the passion and care that students put into looking at texts as a means of getting students to *want to* do the extra hard work that is necessary to get up to grade level.[8]

All ninth and tenth graders study the texts of the Huntington plays in the classroom, attend productions at the theater, and spend every other Friday all year on-site at the theater, where they work with Huntington staff and teaching artists for the equivalent of nearly 20 days of school time each year. As Brown has written:

> During the study of these plays, the Huntington days are filled with interactive activities aimed at improving the understanding of each play as both a literary text and a dramatic production. We find that discussions with actors, re-enactments of scenes, viewings of understudy rehearsals, movie versions of the play, and the like, lead students to ask interesting questions about the characters, the flow of the play, and the author's intentions in creating the piece.[9]

Brown also describes how, back in a Codman humanities classroom, the teacher helps students tap into this enthusiasm when writing about the texts, and when working on more traditional methods of literature studies, such as "vocabulary work, deconstruction of themes/symbolism, character development, journal writing and preparation for literary analytic essays."[10] In addition, all Codman ninth graders compete in the national *Poetry*
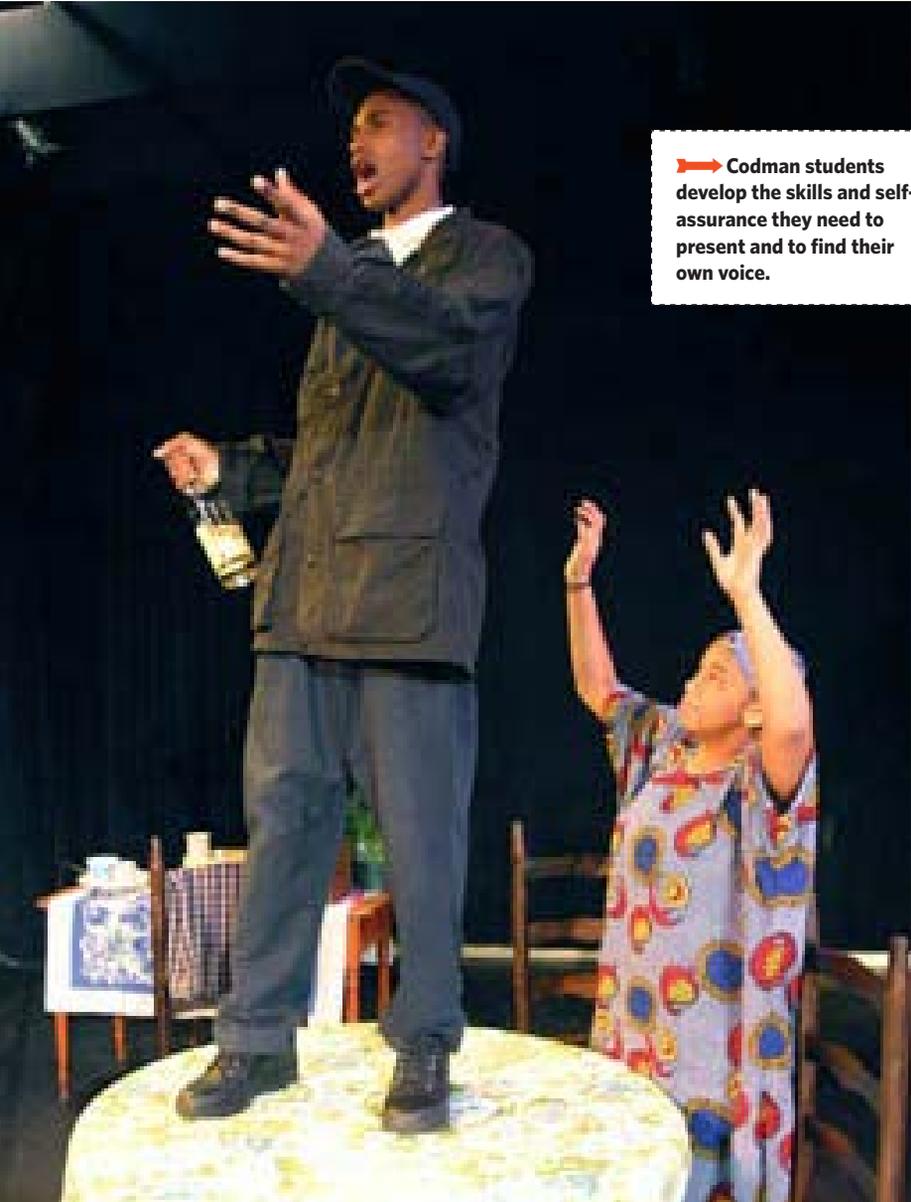
Out Loud competition and all tenth graders compete in the August Wilson Monologue Competition, named for the Pulitzer Prize- and Tony Award-winning playwright and held at the Huntington each year. Both grades also perform a year-end showcase production, which is staged at the Huntington and open to the public.

One cold, wet April morning in Dorchester's Great Hall, small groups of Codman tenth graders were ascending the stage in turn to rehearse short scenes from *A Raisin in the Sun* for their year-end showcase. In the weeks prior to their performance preparation, the students had read the full script, completed in-depth studies of the characters, participated in writing exercises and held lengthy discussions about the play's message and impact, guided by Huntington Theatre staff. Meg O'Brien, who is manager of education operations at the Huntington, turned a director's eye to a group of students as they finished their scene. "What does this group need to do?" she asked the students at large. "Memorize their lines!" came one suggestion, while another student noted that the group needed to speak more loudly and turn toward the audience. As the next group began to rehearse a different scene, which portrayed a family argument, O'Brien stopped the students. She talked about how the dialogue contained references to slavery, gender discrimination, and complicated family dynamics, showing how this richer understanding could inform the students' portrayal of their characters. "Now let's start from the beginning," O'Brien said. "We're onstage in just over a month."

Speaking recently about Codman's partnership with the Huntington, Campbell notes, "Our kids benefit from deep training in finding their own voice and stepping into another's shoes." In addition to taking the required ninth- and tenth-grade drama courses, each year about 25 Codman students participate in the four-week Huntington-Codman Summer Theatre Institute, an immersion in every aspect of theatre that culminates in a full-scale Shakespeare production.

Indeed, the ongoing partnership between Codman and the Huntington has required staying power on the part of both institutions. Campbell's letter to the company, written in December 2001, following the very first semester of students working on-site at the theater, stated: "Our founding class arrived with energy and without self-discipline or experience in attending or studying serious theater. They mumbled, fidgeted, interrupted, and had short attention spans. You believed in us and them, and together we are building a groundbreaking partnership."[11] Affirms Alex, a tenth grader, "Not every school lets you get your talent out there like Codman does."
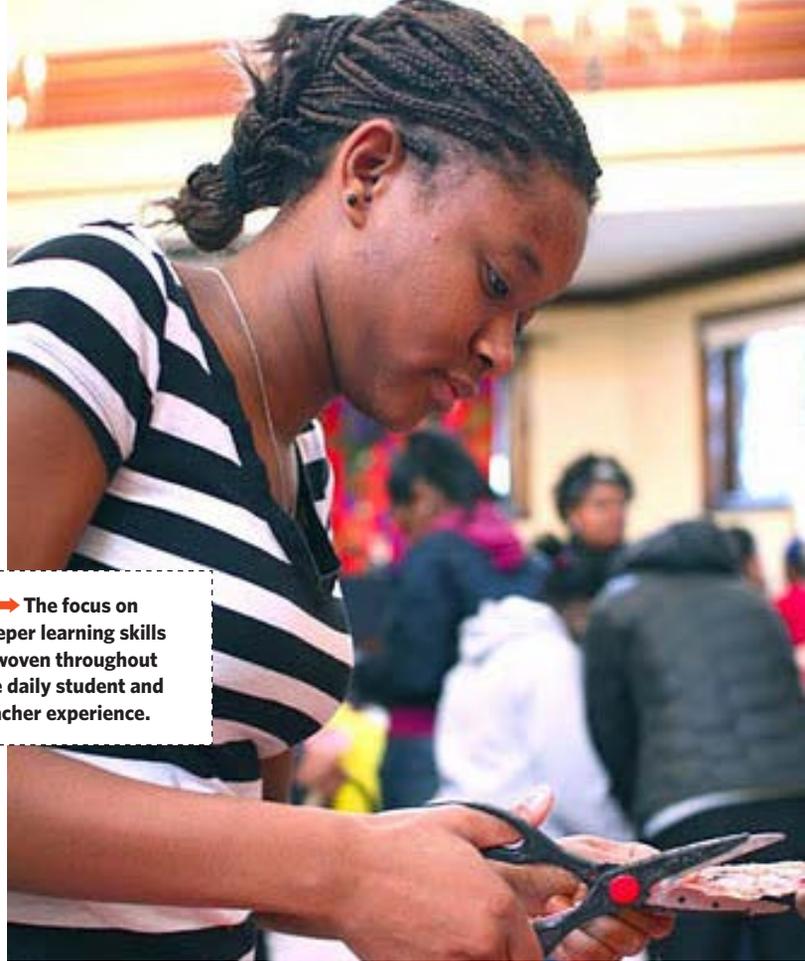
➡ **The focus on deeper learning skills is woven throughout the daily student and teacher experience.**

contributions in immediate and tangible ways that will impact their future behavior; and how to get everyone to show up to meetings on time. Campbell paused and held the group's attention. She had recently been appointed by the Mayor Tom Menino to the Boston School Committee and had spent time visiting several of the city's district public schools. With this perspective, she had a message of appreciation for the Codman faculty: "Your level of thoughtfulness and deliberation and your willingness to try new things when something is not working are remarkable. You don't become defensive; you don't blame the students or their families; you just keep looking for a better way. And I thank you for that."

Codman's extended blocks of interdisciplinary class time—along with time set aside for Crew and Community Circle; time spent outside the school by students doing field work, internships, skill-building and service learning; and time devoted to teacher collaboration—are all elements that stem directly from the school's alignment with Expeditionary Learning principles. Indeed, the EL network considers scheduling time for these activities to be a core practice for its schools and has laid out in detail the ways its schools can integrate EL principles through the design of the daily schedule.[12] Like the other deeper learning schools profiled in this report, which all receive key support from their networks around this educational approach, Codman's focus on deeper learning skills is woven throughout the daily student and teacher experience there.

Becoming a Self-Initiated Learner through the Senior Talk

EARLY ONE APRIL MORNING, DURING THE TIME when rehearsals of the *Raisin in the Sun* were taking place, the entire school had gathered for the weekly "Community Circle," a one-hour, all-school assembly run by students that includes skits, awards, student presentations, and guest speakers. In the spring, Community Circle often features a "Senior Talk." As the culminating presentation event for each Codman senior, the Senior Talk draws on four years of drama training and is modeled on the *Apologia,* Plato's version of a speech given by Socrates as he defended himself at a trial. Each senior is challenged to share with the school community his/her voice, values, and future goals in the tradition of Socrates—to make a defense of his/her life as lived up until that moment.

Before he gave his talk, Chris was introduced by two members of his Crew—the multi-age, single-gender peer group with a faculty leader to which Codman students are assigned in ninth grade and stay with throughout high school. It is primarily through Crew—which meets 30 minutes per day, four days a week—that students at this school form the close-knit social bonds that support their intense academic and personal growth. The Crew members who stood up for Chris that morning were a friend and the faculty leader. Said his friend: "If Chris puts his mind to it he can accomplish anything.... He says a lot with few words. Congratulations from one Crew member to another on making it to your Senior Talk. Congratulations for earning the right to speak your truth."

The teacher then discussed this particular senior's leadership style:

Chris is not caught up in the trappings of leadership. He is not about telling others what to do. He exerts his influence quietly. To another Crew member, who is not focusing and not admitting it to himself, Chris will say, 'What makes you think you are doing all right?' He demands a truthful answer. He asks hard questions of himself too. He makes a plan of action. He's brave enough, honest enough, and strong enough to execute his plan. That is leadership.

Then, a lanky young man with neat cornrows and flashy earrings took the stage and began to tell the story of how his life had been safe and simple at 12 years old, fiddling with the cars in the garage on Saturday mornings alongside his stepfather, as the football game plays on the radio in the background. With the onset of adolescence, however, self-doubt, isolation, and hopelessness took hold, until, Chris recalled, he "began to look at who I am and who I want to be" and decided to ask for help from friends and family. "I learned that you can't stay in the dark places, but you have to come out of that game of hide and seek and live fully in the world," he concluded.

Codman Executive Director Meg Campbell came up to congratulate Chris at the conclusion of his presentation. She told him:

Writing your Senior Talk, we want you to figure out what you are really passionate about. You did that, and even more. You demonstrated that you can ask for help when you need it. You set an example for all of us. Your imagery was powerful—I hope you are writing poetry, and we want to hear more from you.

EXPEDITIONARY LEARNING (EL) DESIGN PRINCIPLES

1. **THE PRIMACY OF SELF-DISCOVERY:** Learning happens best with emotion, challenge, and the requisite support.

2. **THE HAVING OF WONDERFUL IDEAS:** Teaching in Expeditionary Learning schools fosters curiosity about the world.

3. **THE RESPONSIBILITY FOR LEARNING:** Learning is both a personal process of discovery and a social activity.

4. **EMPATHY AND CARING:** Learning is fostered best in communities where students' and teachers' ideas are respected and where there is mutual trust.

5. **SUCCESS AND FAILURE:** All students need to be successful if they are to build the confidence and capacity to take risks and meet increasingly difficult challenges.

6. **COLLABORATION AND COMPETITION:** Individual development and group development are integrated so that the value of friendship, trust, and group action are clear.

7. **DIVERSITY AND INCLUSION:** Both diversity and inclusion increase the richness of ideas, creative power, problem-solving ability, and respect for others.

8. **THE NATURAL WORLD:** A direct and respectful relationship with the natural world refreshes the human spirit and teaches the important ideas of recurring cycles and cause and effect.

9. **SOLITUDE AND REFLECTION:** Students and teachers need time alone to explore their own thoughts, make their own connections, and create their own ideas.

10. **SERVICE AND COMPASSION:** Students and teachers are strengthened by acts of consequential service to others.

EL CORE PRACTICES

TO TRANSLATE THE EL APPROACH INTO SPECIFIC strategies that educators and school leaders can implement, the organization has developed 38 core practices within the areas of curriculum, instruction, assessment, culture and character, and leadership. Core practices are detailed in the *EL Core Practices Handbook*.

Codman Graduation Requirements

4 YEARS OF HUMANITIES (HISTORY & LITERATURE)
World History and Literature I (grade 9)
United States History and Literature I (grade 10)
United States History and Literature II (grade 11)
World History and Literature II (grade 12)

4 YEARS OF MATH
Algebra I (grade 9)
Geometry (grade 10)
Algebra II (grade 11)
Pre-Calculus or Calculus (grade 12)

4 YEARS OF LAB SCIENCE
Physical Science (grade 9)
Physics (grade 10)
Chemistry (grade 11 or 12)
Biology (grade 11 or 12)

2 YEARS OF FOREIGN LANGUAGE
French I (grade 11)
French II (grade 12)

4 YEARS OF PHYSICAL EDUCATION/WELLNESS

1 YEAR OF STUDIO OR PERFORMING ARTS

8 SATURDAY CLASS CREDITS

FIELDWORK REQUIREMENTS:
2 summers of approved enrichment programs with documentation
1 Internship experience

Additional Competency Requirements

→ *Meet Massachusetts Comprehensive Assessment System (MCAS) required test scores to graduate*

→ *Demonstrate proficiency in use of technology to achieve learning goals*

→ *Demonstrate proficiency in writing and defending a persuasive essay*

→ *Demonstrate proficiency in public speaking in English*

→ *Demonstrate proficiency in financial literacy and health education by earning a passing score on the competency test*

→ *Demonstrate leadership and service through a successful internship experience*

→ *Complete portfolio requirement—a selection of work that demonstrates knowledge, abilities, and growth*

> "We slice away at all the other things [that create anxiety in students' lives] and focus on giving the students repeated opportunities to create great work."
>
> RANDY SCHERER,
> *Eleventh-grade humanities teacher, HTHMA*

A Collaborative Learning Environment

Teaming up to create confident, self-directed learners for today and the future

High Tech High Media Arts (HTHMA) is a public charter school located within High Tech High's Point Loma Village—a cluster of schools built over the past decade by the High Tech High network—in San Diego. Founded in 2005, HTHMA, like all 11 schools in the network, is built around the "design principles" of personalization, "adult world" connections, a common intellectual mission, and teachers as designers. Chosen by lottery, 44 percent of HTHMA's 410 ninth through twelfth graders come from low-income families and 12 percent of these students are English language learners (ELLs), compared to San Diego Unified School District's population of 61 percent low-income students and 28 percent ELLs.

HTHMA emphasizes project-based learning. Students spend most of their time in long instructional blocks, working independently or in small groups, to complete complex interdisciplinary projects. Required off-site internships are also core elements of the High Tech High education. Success is evidenced by the impressive student work on display at the school and on the web, and also by more traditional methods of academic assessment. Ninety-nine percent of HTHMA's graduates go on to college, and they also outperform students in the local school district on standardized tests of math and English literacy.
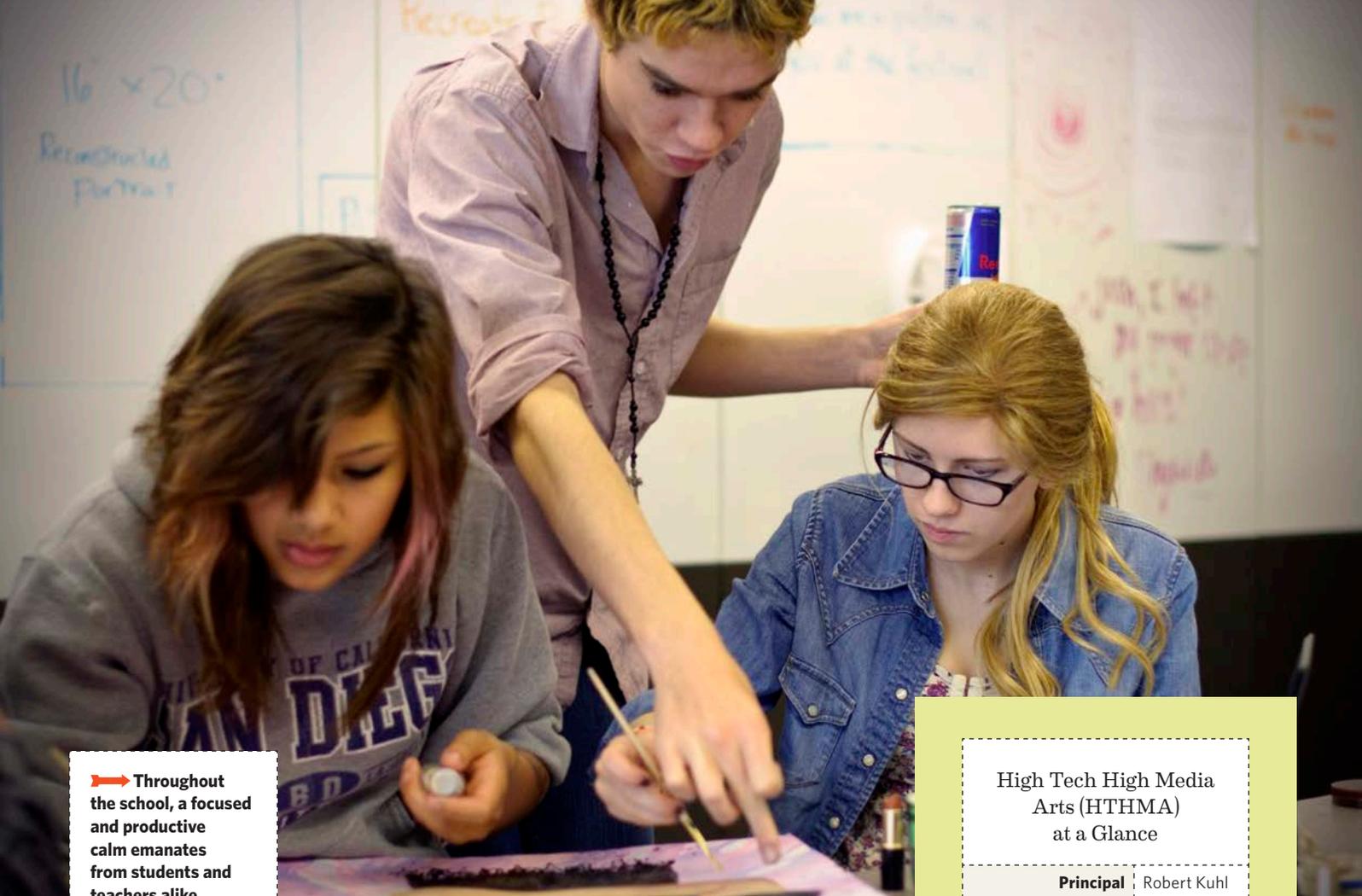
> ⟶ **Throughout the school, a focused and productive calm emanates from students and teachers alike.**

Occupying the top floor of a three-story glass, steel, and cement building designed with clean, long lines, HTHMA has a dramatic entrance. Immediately, one's eye is drawn to the floor-to-ceiling glass walls and the open common area with its soaring, two-story height. Examples of student work add color, texture, and substance throughout. The space is impressively designed as a 21st-century school—double classrooms with retractable white-board dividers; adjacent student work areas with clusters of computers and spaces for students to talk, work, and relax; and a state-of-the-art media and technology lab. What truly stands out, however, is the extraordinary sense of calm that permeates the school. Students create a quiet buzz as they talk and work in small groups and move between the school's main building and the smaller set of classrooms a block away. Throughout the school, a focused, intent, productive calm emanates from students and teachers alike. This sets HTHMA apart from many other high schools, where tension seeps into the environment.

Randy Scherer, a seven-year veteran of HTHMA and an eleventh-grade humanities teacher, surmises what makes HTHMA such a calm place.

> The things that create anxiety are much less present here. Every kid has someone to talk to. Every senior has at least one college acceptance in hand. Energy is devoted to academics and quality exhibitions. We slice away at all the other things and focus on giving the students repeated opportunities to create great work. The pressures on teachers are less, as well. We are not left on our own to meet goals we don't get to set. We work together to build a culture of respect, professional collaboration, and collegiality.

The way HTHMA designs student and teacher time is an important component of creating the relationship-centered culture that Scherer describes. As HTHMA Director Robert Kuhl notes, creating the opportunities for relationships to develop—among students and their peers, teachers and students, teachers and their colleagues, and the school's curricula and the world—is a driving priority for how time is scheduled. These close relationships undergird students' success in meeting rigorous academic demands.

HTHMA's design principles—personalization,

High Tech High Media Arts (HTHMA) at a Glance

Principal	Robert Kuhl
Student Population	
Grades served	9 – 12
Number of students	410
Qualify for free/reduced-price lunch	44%
Qualify for special needs services	13%
English language learners	12%

Students Scoring At or Above Proficient on the California STAR Exam in 2011 (difference compared to surrounding district)

ELA	67% (+13%)
Math	30% (+4%)

Sample HTHMA 9th Grade Schedule

8:30 – 9:35	Humanities
9:40 – 10:45	Humanities
10:50 – 11:55	Spanish
11:55 – 12:35	Lunch
12:40 – 1:40	Math/Physics
1:45 – 2:45	Math/Physics
2:50 – 3:30	X-block or Advisory

adult world connections, common intellectual mission, and teachers as designers—provide the framework for how school leaders schedule student and teacher time. Independent student work time, attention to relationship building, the requirement that all students complete internships in the community, and the significant teacher collaborative time built into the schedule all emanate from these design principles. The result is that time at HTHMA is allocated in ways that intentionally support student acquisition and use of deeper learning skills as a matter of course throughout their educational experience. During the National Center on Time & Learning researchers' visit, HTHMA seniors were preparing for their final graduation requirement— the exit interview. During the interview, in front

At HTHMA, close relationships undergird students' success in meeting rigorous academic requirements.

of teachers, peers, younger students, and family members, students articulate why they have earned a diploma from HTHMA by presenting examples of their work and summing up their personal and academic growth and future goals. As Kuhl explains:

> We are asking the seniors, "How have we realized our mission through your experience?" We are striving to graduate young people who have discovered what motivates them as learners, and how to continue to ask questions and work on finding the answers. That sets them on the path to becoming successful, well-fulfilled adults.

HOW HTHMA ORGANIZES STUDENT TIME

For students, the HTHMA school year runs 176 days beginning in late August and ending in mid- June, and each day runs from 8:30 AM to 3:30 PM Monday through Friday. Though this is the same number of student days as nearby schools, the HTHMA year has more staff days for teacher collaboration.

At HTHMA, the class schedule is structured to allow for interdisciplinary study and to maximize the amount of time teachers have with the same group of students. There are five class periods, each slightly more than one hour although subjects are frequently combined and taught by one teacher in two-hour blocks. For example, ninth graders take English/World Cultures and Geography for two periods per day, taught by one ninth-grade humanities teacher. They also take a daily two-hour Math/Physics class taught by one ninth-grade math/ physics teacher. In addition to the core academic classes, ninth graders take Media Arts and Spanish, which each meet for one hour, five days a week, for one semester each. Over the course of the year, the ninth graders will have all their classes with the same group of 50 students, taught by three to four teachers in total. Each day also has a 40-minute X-block or Advisory period. The X-block is an electives period in which students choose what class they want to take. Electives range from sports to music to individual tutoring and academic assistance.

Advisory groups are multigrade groups of 17 students. Each student has the same faculty advisor over his/her four years at the school. The advisor monitors the student's personal and academic development and serves as the point of contact for the student's family to the school.

As students move through tenth to twelfth grades, most classes remain in extended interdisciplinary blocks, with the exception of math, which is taught as a single subject class. "We have found that math naturally integrates well with physics in grade nine. However, forcing this integration in other grades [chemistry and math, for example] caused either math or science projects to suffer," says Kuhl.

The long blocks of time support the project-based learning approach that requires students to work independently and in small groups to complete interdisciplinary projects. It is primarily through project-based learning that HTHMA emphasizes deeper learning skills. During their projects, students are guided to engage in more complex ways with a narrower set of academic concepts by asking and answering questions, rather than memorizing content

Developing Scientific Inquiry, Collaboration, and Critical Thinking Skills in the "Senior Garden"

A KEY ELEMENT OF PROJECT-BASED LEARNING at HTHMA is the final product, presented by the students in an exhibition attended by teachers, peers, family, and community members. A few years ago, a group of seniors discovered a barren hillside space, located a few blocks from the school. At the time, the plot's past identity as a garden was barely discernible after decades of abandonment. Nevertheless, the twelfth graders gained permission from the owners to take over the site. Then these seniors cleared the land and began to coax the soil back to health with compost and nutrients, so that they could cultivate flowers, fruits, and vegetables. In true interdisciplinary fashion, the students also installed art and media next to the plants to celebrate the interconnectedness of nature. By May 2012, the "Senior Garden" was in full bloom. Flowering vines and vegetables crawled over plot boundaries; sculptures rose out of the ground; and vibrant artwork transformed an old toolshed. Delighted students laughed and joked as they guided their parents through the results of a semester's work in environmental science and digital art in mixed media.

In their environmental science class, the students had spent up to four hours in the garden per week (in two different groups for up to two hours a day each) over the previous semester. Garden time accounted for approximately 30 percent of the students' total time in the course. Students worked in small groups to design their garden plots, cultivate fruits and vegetables, and complete the "Three Meters Cubed" project. For this project, students taped off a three-meter cube of earth, and then recorded and photographed in minute detail everything observed there over the subsequent three months. The investigation emulated the methods of the noted biologist Edward O. Wilson, whose 2010 article in *National Geographic*, with photos by David Liittschwager, explained what scientists have learned by observing life in small spaces:

> Inch by inch there are shifts in light and temperature, the size of the cavities, the chemistry of the air, soil, or water, the kind of food available, and the species of organisms. The combination of these properties, down to a microscopic level, defines the surface ecosystem. Each species is specialized to survive and reproduce best in its particular niche.[13]

Lia Mueller, HTHMA's twelfth-grade environmental science teacher, eludcidates the value of the Senior Garden Project:

> One of the trickiest components in project-based learning is designing a semester-long project that incorporates multiple topics, keeps students motivated, and challenges them to explore those topics at a rigorous academic level. When I came across the Wilson/Littschwager article, the possibilities were immediately apparent. Here was an opportunity for my students to discover and document the life present in a portion of urban land whose natural history had never been directly studied or documented. Students would be able to research ecosystem dynamics and soil science, as well as invertebrate zoology and botany in an authentic setting. In addition, by modeling the project on Wilson and Littschwager's work, students would have ample opportunity to explore areas of personal interest within their designated plot. This inquiry gave students the opportunity to delve deeper into a specific area of focus, making their project unique while contributing to the collective understanding of their peers.

Students who decide to take environmental science as an honors course are required to research, design, and complete an individual project of their own in addition to the class project. Students submit a proposal to their teacher for approval. The teacher aligns the project proposal to environmental science standards, providing guidance and suggesting modifications prior to approval. Students also complete a review of an appropriate book of their choosing and serve as in-class tutors for their peers. This model of academic coaching strengthens the experience for all.

In addition to revitalizing the land, students have also transformed the landscape with artwork. Down the hill from the Senior Garden, at the edge of the property, dozens of small, square art pieces form a "cluster painting" that nearly covers an old toolshed. The art was created in Joshua Krause's digital art and mixed media class, themed *Restoration and Second Life*. The students had created these pieces of art in answer to the "essential questions" Krause had posed to them at the beginning of the semester: "Can artwork grow in a garden? Does the way a space looks change the way we appreciate its value? Can basic materials revive a space, a community, a culture? What is a space you can reclaim?" Says Krause about his goal in assigning the project:

> In all of our collaborative work, we strive to bring solutions to problems posed by our "clients." In the case of the dilapidated shed, a mere coat of paint wouldn't do, but an installation addressed the problem. In the very essence of collaboration, one piece of art wouldn't have transformed the space, but many pieces, from many voices and perspectives, would create a new space and a new life. Each piece of work relied on all the other pieces, and that very concept created a sense of community and togetherness.

example, during one week every March, the entire school replaces its regular schedule for "One World Week," where students and teachers are immersed in experiences outside the school, both locally and globally. Students create art at local museums; travel to developing countries, such as Nicaragua; cycle for hundreds of miles; camp in the desert; and build musical instruments. HTHMA juniors and seniors also work during four consecutive 30–40 hour weeks at an off-site internship each year. In the spring of 2010, the juniors published *ampersand,* a journal compiling their internship stories. They introduced the journal with these words:

> ➡ **Through projects, students engage in complex ways with academic concepts by asking as well as answering questions.**

For an entire month we were no longer students in a classroom. We were students & teachers, artists & assistants, lifesavers & caretakers, and so much more. Through our challenges we all gained a new level of maturity, responsibility, and a sense of exactly what we are capable of.

Some HTHMA students also spend additional time in school participating in two summer programs. The first is a summer "bridge" program that helps new ninth-grade students adapt to the school; the second is a credit-recovery program for students who struggled during the academic year. HTHMA's credit-recovery program is personalized to meet the needs of its students, focusing not only on academic skills but also on self-management and interpersonal skills.

HOW HTHMA ORGANIZES TEACHER TIME

HTHMA teachers teach from 8:30 AM to 3:30 PM (with a one period prep and a 45-minute lunch); then meet together three mornings a week, from 7:30 AM–8:15 AM; and offer office hours two days a week, from 3:30 PM–4:30 PM. Teachers also can frequently be found working with students during lunch, other days after school, and sometimes even on weekends. Two mornings a month are "late starts." Classes start at 9:30 AM, allowing for longer, more in-depth collaboration time among teachers. New HTHMA teachers attend a seven-day training before school starts and are joined for eight additional days of collaboration by all teachers. Seven additional professional development days are built in throughout the year.

HTHMA organizes teacher time to maximize collaborative practice. Many classes are team taught, with teachers' offices co-located and prep time often

in preparation for tests. "We gladly give up some breadth for significant depth," Kuhl states.

To teach the skills students need to successfully work in this environment, HTHMA teachers emphasize daily planning and routine, organization, cooperation/communication among team members, and daily reflection on performance. The school's block schedule enables small groups of teachers and students to spend large amounts of time together, forming close relationships that help students stay organized and motivated. This adult support is particularly important in a learning setting that requires students to work independently and take considerable initiative.

HTHMA also invests substantial time into its principle of creating "adult world connections" for students. Projects are situated within the concerns and issues of the local community and broader society, and adult volunteers frequently provide guidance and mentoring for students. The project-based learning approach creates opportunities and a variety of "entry points" for different adults to lend expertise and build relationships with students in a way that more traditional curricula do not. For

scheduled together to maximize communication and relationship building throughout the day. The early morning teacher meetings that take place two to three times a week are used in one of three ways. Either the full faculty meets together and focuses on school-wide matters, or small groups of teachers engage in professional development and inquiry around self-identified problems of practice, or teachers work with grade-level teams. Last spring, teachers were working on teaching writing across the disciplines, improving students' ability to engage in peer critique, and improving the project-based learning experience for English language learners.

ABOUT HIGH TECH HIGH NETWORK

High Tech High was launched as a single charter high school in 2000 by a coalition of San Diego civic and high-tech industry leaders who had come together to discuss the dearth of qualified candidates for high-tech jobs. The group was particularly concerned about the "digital divide" that often prevents women and people of color from entering the STEM disciplines. According to the High Tech High website, "The founding group was clear about its intent: to create a school where students would be passionate about learning and would acquire the basic skills of work and citizenship."[14] As the original High Tech High thrived, the network evolved into a charter management organization that now operates two elementary schools, four middle schools, and five high schools in San Diego County. In 2007, High Tech High launched its own graduate school of education, offering school and teacher leadership M.Ed programs, professional development, and teacher credentialing. Six High Tech High schools, including High Tech High Media Arts, are clustered in the "village" built by the network in San Diego's Point Loma neighborhood.

High Tech High's mission is to "develop and support innovative public schools where all students develop the academic, workplace, and citizenship skills for postsecondary success." Goals for each High Tech school include:

→ SERVE A student body that mirrors the ethnic and socioeconomic diversity of the local community;

→ INTEGRATE TECHNICAL and academic education to prepare students for post-secondary education in both high tech and liberal arts fields;

→ INCREASE THE number of educationally disadvantaged students in math and engineering who succeed in high school and post-secondary education;

→ GRADUATE STUDENTS will be thoughtful, engaged citizens.[15]

High Tech High's design principles were developed by founding principal Larry Rosenstock and

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High Tech High Graduation Requirements

ENGLISH: *4 years*

SOCIAL SCIENCE: *3 years*

MATH: *4 years*

SCIENCE: *4 years*

LANGUAGE: *2 levels*

VISUAL ARTS: *1 year*

ELECTIVE: *1 year*

ACADEMIC INTERNSHIP

SENIOR PROJECT *Seniors complete a substantial project focused on a topic of their choice*

EXIT INTERVIEW

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colleagues in the New Urban High School Project (NUHS), an initiative of the U.S. Department of Education's Office of Vocational and Adult Education. The design principles are:

→ **PERSONALIZATION:** High Tech High students are known well by adults in the school. Curriculum, instruction, and assessment are student-centered. Students pursue their passions and interests through projects. Personal reflection is an explicit academic routine.

→ **ADULT-WORLD CONNECTIONS:** All students in every grade level connect their studies to the world beyond school through field studies, community service, internships, and consultations with outside experts.

→ **COMMON INTELLECTUAL MISSION:** At High Tech High, all students learn to use their minds well in a college-going culture. Schools articulate common expectations for learning that apply to all students across the academic disciplines. The school does not track students. Students work together in a variety of homogeneous and heterogeneous groups.

→ **TEACHER AS DESIGNER:** High Tech High teachers are program and curriculum designers. They design their own curricula and projects. Additionally, they step up to lead parts of, or entire, meetings and to participate in critical decisions regarding curriculum, assessment, classroom budgets, professional development, advisory, hiring, facilities, student discipline, and other significant areas of the school.

> "Strong language skills develop most effectively in context and emerge most naturally in a purposeful, language-rich, interdisciplinary and experiential program."

NETWORK'S PEDAGOGICAL APPROACH, *Internationals Network for Public Schools*

Peer to Peer Learning

Leveraging diversity to create an engaged and supportive learning environment

The International Community High School (ICHS) shares, with two other New York city public schools, a sprawling building that covers half a city block in the South Bronx. Started by the Internationals Network for Public Schools in 2006 as a New York City public school exclusively enrolling immigrants who are English language learners, ICHS now enrolls 371 recent young immigrants in grades 9 – 12. The student population is 79 percent low-income, 68 percent Hispanic, 28 percent Black (African and Haitian), 2 percent Asian, and 2 percent White (Middle Eastern, largely Yemeni). Forty-five percent of these students enter ICHS with little to no literacy in their home languages, while 80 percent start ICHS having been in the U.S. less than two months.

During a humanities class one afternoon last spring, a mixed-age class of 19 students was developing a survey for family members as part of a project entitled *My Roots*. Working in small groups seated at tables, the students had generated ideas for questions, and now the entire class was voting on the best questions to include in the survey. The class voted thumbs-up for *What is the difference between this country and your native country? How did you feel on the first day you came to the United States? Who from your country do you miss the most?* As they divided into pairs to test out the survey, a student from Yemen quietly offered to help her tablemate from the Dominican Republic.

Students collaborate with one another to gain language skills and content mastery.

Speaking first in English and then in Spanish, teacher Trevor Safford asked the class: "When we are interviewing our partners, do we try to write down every single word they say?" He then asked one young man to translate into Arabic for others at his table and then demonstrated a strategy for taking shorthand notes on the whiteboard, writing "Instead of 'there are more mosques in Senegal' you might write '+ mosques Senegal' or 'Senegal mosques > U.S. mosques.' " At the sound of a beep from the PA system, all the students looked up. Before explaining a schedule change, ICHS Principal Berena Cabarcas requested: "Students, please translate this for those who need it."

The Internationals Network approach is tailored to ensure that high school-age recent immigrants acquire English fluency, are prepared for post-secondary education, and develop deeper learning skills. The main pedagogical strategies used by schools in the network are experiential, project-based learning; collaboration among students and among teachers; assessment by portfolio in addition to more traditional measures; the use of peer feedback as a tool for students and teachers to reflect and improve; and personalized academic and emotional support.

Language is not taught as a separate class at ICHS. Instead, every teacher teaches language within the context of his or her discipline. According to the network, "[S]trong language skills develop most effectively in context and emerge most naturally in a purposeful, language-rich, interdisciplinary, and experiential program."[16] ICHS considers multilingual and multicultural proficiencies as key skills for success in the 21st-century economy and as vital elements of its diverse school community. Students and teachers can often be heard translating explanations and comments back and forth into two, and sometimes three, languages within the course of a single classroom conversation. As global studies teacher Tim Blackburn explains:

We never isolate the language skills from the content. We are always connecting. Students really will get it if given the time to engage and re-engage with the text, language, skills, concepts, and ideas. When we present language as a system and demystify it, students become much less reluctant to speak and write. For example, one strategy we use is to break down the parts of speech in the context of analyzing and thinking about big ideas.

International Community High School (ICHS) at a Glance	
Principal	Berena Cabarcas
Student Population	
Grades served	9 – 12
Number of students	371
Qualify for free/ reduced-price lunch	79%
Qualify for special needs services	4%
English language learners	90% [Students come from 20 countries and speak more than 15 languages]

ELL Students Scoring At or Above Proficient on the New York Regents Exam in 2011 (difference compared to ELL students in surrounding district)	
ELA	40% (+7%)
Math	60% (+23%)

Sample ICHS Student Schedule

Time	Subject
9:00 – 10:00	Science
10:03 – 11:03	Math
11:06 – 12:06	Intervention
12:06 – 12:46	Lunch
12:49 – 1:49	English
1:52 – 2:52	Physical Education / "Selectives"
2:55 – 3:55	Social Studies

HOW ICHS ORGANIZES STUDENT TIME

For its students, the ICHS day runs from 9:00 AM to 3:55 PM Monday through Thursday and from 9:00 AM to 2:40 PM on Friday—a school-specific, 40-week schedule that ICHS teachers designed and voted to implement through the "school-based option" process that provides autonomy to individual New York City public schools on a variety of issues.

At ICHS, students and teachers are organized into interdisciplinary teams (each team contains approximately 80 students and four or five teachers). Teams are generally split into either ninth and tenth graders or upperclassmen, with a set of teachers who span the disciplines. Students are assigned to classes within their teams and are also intentionally mixed according to English language proficiency, prior schooling, and other factors.

Classes are 60 minutes long and mostly single subject. Within the New York City public school system, 60 minutes represents an expanded block, compared to the conventional schedule of 45-minute classes. Other distinguishing features of ICHS include classes that are designed to employ experiential, project-based learning; collaboration among students and among teachers; and public presentation of students' end-of-semester portfolio. In addition, at ICHS, classes integrate content needed to pass the New York State Regents exams (required for graduation) and to cover material in state-mandated academic standards

as well. Third period is reserved for "Regents review" or "Enrichment." Students who have not yet passed the five Regents exams required for graduation enroll in Regents review classes, which are taught in a traditional teacher-led model and focus on specific skills and knowledge needed to pass the tests. Other students participate in a variety of enrichments during the third period— including literacy enhancements, calculus, strengthening Spanish language skills, advanced arts, and other pursuits. Each ICHS student has a schedule individually designed to provide what he or she needs to satisfy graduation requirements.

The school's efforts to provide adult-world connections culminate in a mandatory eleventh-grade "internship" class, where students spend ten Fridays offsite and the other days as classroom time to concentrate on career exploration and college-readiness. A map of New York City emblazoned with the headline *Where Are Our Interns?* is plastered prominently on one of the school walls, with bright yellow post-its dotted throughout the boroughs.

ICHS students also attend classes and activities in July and August. In these summer months, students are required to attend the school's five-week summer program, dedicated to preparing for the Regents, that runs from 9 AM to 1 PM. Additional activities include attending classes at Hostof Community College; participating in an intensive week preparing to be college peer educators in a program called College Summit; or taking a two-week Montreal trip for French language immersion, sponsored by the French Embassy's French Heritage Language program.

HOW ICHS ORGANIZES TEACHER TIME

ICHS teachers are required to work Monday through Friday from 9:00 AM to 3:55 PM. This schedule, designed and approved by ICHS teachers and school leaders, allocates all the teacher time mandated by the New York City Department of Education—including the standard work day, the 37.5 additional minutes per day for four days/week instituted in 2006 to provide additional help to struggling students, and the mandated 40-minute monthly principal/faculty meeting—in ways that are designed to maximize teacher collaborative time.

One of the teachers described the school schedule—which balances individual student course needs with teacher preparation time prescribed by union contracts and extra time for teacher collaboration, all within the parameters of the district-determined

High-school age recent immigrants acquire English fluency, are prepared for postsecondary education, and develop deeper learning skills.

Developing Critical Thinking and Communication Skills through Portfolio Presentations

GIVEN THE COMPLEX scheduling requirements of the New York City school system, it is no small feat that ICHS Principal Berena Cabarcas has carved out six afternoons per year exclusively for student portfolio presentations. On these days at ICHS, students who are not presenting their portfolios are released early. Each teacher has a group of five students who present their portfolios reflecting work from the entire semester and also critique their peers' presentations.

On the morning of their presentations last spring, students arrived at school formally dressed— some wearing Western-style suits, and others, the traditional formal dress of their native countries. After most students were dismissed in the early afternoon, the ones presenting their portfolios made their way upstairs to the assigned classrooms, nervously tying ties and adjusting head scarves.

As a group of five tenth graders made their way into his classroom, Tim Blackburn, a global studies teacher, eagerly anticipated the event. The students from his class would be presenting their work analyzing the growth of the Islamic Empire, and they would also present on units they had studied in humanities and math. During his teacher team's two-hour meeting the previous week, Blackburn had been briefed by the other teachers on his team about what to look for during the humanities and math sections of students' presentations, just as he had briefed them on how to assess the students' global studies presentations.

Emmanuel R., a native of the Dominican Republic, was the first to present. With his voice gaining in confidence, he sketched a triangle on the whiteboard to explain his first project, one focused on mathematics: Calculating the angle of the sun's elevation at different points over the course of the day using the length of his shadow, the tenth grader deftly sketched the angles and showed how he used trigonometry to predict the next angle over a consistent span of time. Through a 20-minute PowerPoint presentation, Emmanuel detailed

other projects he had done, including in science (researching the genetic similarities among different animals using both structural and DNA evidence), humanities (analyzing the motivations of the main character in the Kurt Vonnegut short story *The Foster Portfolio),* and world studies (explaining how cultural diffusion helped the expansion of the ancient Islamic Empire).

At various points during the presentation, Blackburn interjected to pose pointed questions to his student, such as: "Why is a cladogram helpful in demonstrating your hypothesis that the pig is most closely related to the hippopotamus? Why is the DNA evidence that disproved your hypothesis more important than the structural evidence that supported it?" Emmanuel's peers, encouraged by Blackburn to do so, also asked a few questions. After he concluded his presentation, Blackburn asked Emmanuel to wait outside and then spent about ten minutes in conversation with the group of students, evaluating the presentation they had just heard using the school's customized rubric. When called back into the room, Emmanuel was congratulated by everyone. Blackburn offered content-focused feedback: "Next time, go more in-depth on your literary and historical analyses." The teacher also recommended specific presentation strategies: "Try to use your hands, but make sure not to pace in front of your slides." Emmanuel smiled in relief, sinking into his seat as the next student readied her presentation.

Each ICHS student has a schedule individually designed to provide what he or she needs to satisfy graduation requirements.

In addition to these meeting times, once a month, teachers who have a mix of ninth- and tenth-grade classes have a full day of professional development, totaling nine full days over the course of the year. During this time, the teachers observe at other schools within the Internationals Network for Public Schools, co-plan lessons and projects, and attend external professional development on specific subjects. The teachers who have eleventh- and twelfth-grade students have an extra professional development period each week that totals to approximately the equivalent professional development time as the ninth and tenth grade teachers overall. As they participate in these professional development activities, ICHS teachers present what they are learning to their peers in the portfolio-style required of students. Additionally, at ICHS, new teachers are required, and veteran teachers are encouraged, to attend two-week professional development seminars offered by Internationals over the summer.

Like other deeper learning schools, ICHS organizes student and teacher time in alignment with the principles and core practices of its supporting network. At Internationals, the deeper learning skills are considered and taught through the lenses of cultural adjustment and English language acquisition for every student. In designing its schedule, ICHS, as a district public school, contends with more complicated scheduling challenges and less autonomy than charter schools. Nevertheless, ICHS has been able to incorporate many of the specific time practices of other deeper learning schools, including small teacher/student teams that provide personalized support, portfolio assessments that require students to synthesize and think critically about academic material, and off-site internships to connect students with the adult world. The Internationals approach of immersing students in academic content across disciplines while teaching English fluency is in itself a deeper learning strategy. Students collaborate with one another to gain language skills and content mastery. Here, they communicate in a multilingual and multicultural environment in which they must consider unfamiliar perspectives multiple times every day. With the help of their teachers, ICHS students are encouraged to think critically and problem solve in and outside the classroom.

school day—as a "work of art." Teachers attend planning meetings and professional development sessions as a teacher team, with a group of four or five teachers assigned to approximately 80 students. Some of the teams also include paraprofessionals, who provide support to students receiving special education services. Just as ICHS students are organized, so the teachers are grouped heterogeneously in terms of experience, discipline, language background, and gender to ensure that everyone brings a different perspective to the team.

All ICHS teachers meet in their teams for two hours every week, while the students participate in partner-led art programming. Some of this teacher meeting time is spent addressing the individual issues of every student on the team—monitoring academic progress by analyzing student data, attending to social challenges, and reaching out to the student's family. A guidance counselor who is linked to each team provides support in resolving students' non-academic problems. Teachers provide feedback on one another's curricula and engage in joint planning for cross-disciplinary projects and end-of-semester portfolio presentations. Further, each teacher team draws on the resources of discipline-specific coaches. Many of the coaches are from the faculty at Bard College, which is the result of a developing partnership between the two institutions. Coaches help with curricula design and instructional strategies. In addition, ICHS teachers meet with their departmental colleagues for one hour each week, to focus on common teaching strategies and assessments and to work on matching the scope and sequence of the school's diverse curricula.

INTERNATIONALS NETWORK FOR PUBLIC Schools founded its first high school in 1985 on the campus of LaGuardia Community College. This rewas the result of a collaborative effort between the New York City Department of Education and the City University of New York. The network was incorporated as a 501 (c)(3) nonprofit in 2004 and has evolved into a multidimensional intermediary, working in partnership with local education departments and communities to support ten high schools in New York City and two in California.

Internationals provides support to member schools through professional development events, leadership development, and curriculum development. In partnership with Long Island University and the New York City Department of Education, in 2008, the network developed I-START, an alternative teacher certification program based on the urban teacher residency model. I-START prepares teachers of English as a Second Language for New York City schools by apprenticing candidates with mentor teachers in International High Schools and engaging them in school-based projects.

The Internationals approach to educate English language learners is based upon five key tenets. For each of these, the network has developed a comprehensive set of associated practices, which inform school leaders and teachers about how to implement these tenets in the classroom. The tenets are:

→ **HETEROGENEITY AND COLLABORATION:** Schools and classrooms are heterogeneous and collaborative structures that build on the strengths of each member of the school community to optimize learning.

→ **EXPERIENTIAL LEARNING:** Expansion of the 21st-century schools beyond the four walls of the building motivates adolescents and enhances their capacity to successfully participate in modern society.

→ **LANGUAGE AND CONTENT INTEGRATION:** Strong language skills develop most effectively in context and emerge most naturally in a purposeful, language-rich, interdisciplinary, and experiential program.

→ **LOCALIZED AUTONOMY AND RESPONSIBILITY:** Linking autonomy and responsibility at every level within a learning community allows all members to contribute to their fullest potential.

→ **ONE LEARNING MODEL FOR ALL:** Every member of the school community experiences the same learning model, maximizing an environment of mutual academic support. Thus, all members of the school community work in diverse, collaborative groups on hands-on projects; put another way, the model for adult learning and student learning mirror each other."[17]

International Community High School (ICHS) Graduation Requirements

To graduate ICHS, students must acquire a New York State Regents diploma by earning 44 credits, as follows:

ENGLISH	8
SOCIAL STUDIES	8
SCIENCE	6
MATH	6
ARTS	2
IN A LANGUAGE OTHER THAN ENGLISH	2
HEALTH AND PHYSICAL EDUCATION	5
ELECTIVE CREDITS	7

AND PASSING 5 REGENTS EXAMS IN THE FOLLOWING SUBJECTS:

Comprehensive English
Mathematics
Global History and Geography
U.S. History and Government
Science

ICHS also requires graduating students to

COMPLETE THE INTERNSHIP PROJECT. *This includes participating in the internship, creating a website with essays reflecting on the experiences, and creating a resume.*

CREATE AND SUCCESSFULLY PRESENT A GRADUATION PORTFOLIO: *The portfolio must include literary analysis, a social studies research paper, written results of a science project or experiment, and a math application project. The presentation, which is given to teachers, peers, community and family members, includes a 30-minute presentation and 60–90 minutes of questions. The school aligns its portfolio presentation requirements with the New York Performance Standards Consortium. At ICHS, students also are required to give shorter presentations twice a year leading up to their senior graduation portfolio.*

INDIANAPOLIS, INDIANA
A member of the New Tech Network

Analyzers, Evaluators, and Creators

Fostering higher-order thinking skills through creativity and engagement

"What drives you to want to succeed? What blocks your way, and how do you overcome it? Understanding your motivation is critical to becoming a self-initiated learner." For seniors at New Tech High in Indianapolis, a very personal exploration, framed by these questions, is sparked by their in-depth analysis of one of the most complicated and troubled characters in all English literature—Shakespeare's *Hamlet*. During the seniors' discussion of the tragedy, taking place during their daily 90-minute English/history seminar, they explore Hamlet's psychological profile and intrinsic/extrinsic motivations. Explains Mark Mendoza, the twelfth-grade English teacher: "We specifically chose Hamlet because he is a procrastinator, and we don't want these kids to be procrastinators. We want them to take action. So, we're exploring that theme throughout reading *Hamlet*. As we read the play, the students engage in literary criticism and analysis, and, at the same time, we are using the play as a platform to explain motivational theory and have the students examine their own motivations."

New Tech High at Arsenal Tech, which is part of the New Tech Network, was founded with the mission of broadly preparing its students to become the "analyzers, evaluators, and creators who will be successful in the global economy."[18] Begun in 2007 as a magnet school within the Indianapolis Public Schools (IPS), New Tech High is part of Arsenal Technical

> ⟹ **The New Tech model focuses on the skills of citizenship, a work ethic, presentation, critical thinking, and collaboration.**

High School, a multischool campus comprising three magnet schools and four smaller academies for non-magnet students—the freshman, sophomore, junior, and senior academies. New Tech High enrolls 283 students in grades 9 – 12, and any student who resides within the IPS district is eligible to attend New Tech High, even if Arsenal Technical High School is not his/her regular district school. Because New Tech High is a magnet option, students who are interested in attending the school must complete a magnet application to be admitted. Largely, the school's student population reflects IPS as a whole: 82 percent of students qualify for free or reduced-price lunch; 18 percent are English language learners; 16 percent receive special education services.

In addition to academic content aligned with the Indiana state standards in core subjects, the New Tech model has a specific focus on teaching students the skills of citizenship, a work ethic, presentation, critical thinking, and collaboration.[19] Students develop these skills by collaborating on and completing integrated group projects, and teachers assess their progress using rubrics for each skill. New Tech High's unique educational approach has produced impressive results. In 2011, New Tech High students outperformed their peers in the surrounding district high schools on the English language arts and math

ISAT, Indiana's state standardized test. New Tech High's graduation rate also surpassed the district average that year, as it graduated 82 percent of its students, compared to an average of 75 percent district-wide.

HOW NEW TECH HIGH ORGANIZES STUDENT TIME

Similar to the other deeper learning schools featured in this report, New Tech Network's design principles—real-world, project-based learning; the use of technology to support instruction; and maintaining a school culture that promotes trust, respect, and responsibility—provide the foundation for how time is scheduled for students and teachers here. The school's long, interdisciplinary class periods, web-enabled laptops that allow instant access to information, and the significant amount of time dedicated to teacher collaboration directly correlate to the network's design principles. Instead

New Tech High at Arsenal Tech at a Glance

Principal	Scott DeFreese
Student Population	
Grades served	9 – 12
Number of students	283
Qualify for free/ reduced-price lunch	82%
Qualify for special needs services	16%
English language learners	18%

Students Scoring At or Above Proficient on the ISTAP Test in 2011 (difference compared to surrounding district)	
ELA	54% (+15%)
Math	49% (+10%)

Sample 11th-Grade Student Schedule

7:30 - 9:17	American Studies – Honors US History and Honors English
9:22 - 11:07	Biochemistry – Honors Chemistry and Biology II
11:10-12:50	Electives and lunch on main campus
12:50-2:30	Mathematical Applications – Honors Pre-Calculus and Honors Physics

As a part of the Indianapolis public school system, New Tech High uses the same academic calendar as other IPS high schools. New Tech students attend school for 36 weeks, from August through June, and the student day begins at 7:30 AM and ends at 2:30 PM Monday through Friday. However, unlike traditional IPS high schools that schedule 45-minute single-subject class periods, core academic class periods at New Tech High are taught in 90-minute interdisciplinary blocks. The exception to this schedule is freshman Algebra, the only math subject on the state standardized test. Taught by two teachers during a 90-minute block, Algebra gives students time to receive additional practice and support. Every day between 11:10 AM and 12:50 PM, New Tech students eat lunch and attend 45-minute long elective classes in other buildings on the Arsenal Tech campus. (New Tech High itself does not provide any elective classes.)

At New Tech High, project-based learning is the dominant pedagogical approach for core academic classes. Principal DeFreese explains the rationale:

of allocating special periods of time to teach deeper learning skills, New Tech High embeds these skills across all its content areas. Says Principal Scott DeFreese, these skills are essential for success:

> Developing strong work habits and critical thinking and presentation skills, as well as the ability to collaborate with others, is crucial to our students' success, both here at New Tech and, more importantly, after they graduate. We teach and assess these skills in every class so students are prepared for the real world. When they leave here they will have to collaborate with others and communicate their ideas, so we give them a learning environment to develop those skills.

"Deeper learning requires deeper relationships with adults facilitating the learning…. The longer class periods allow for this."

New Tech Students Advise the Indianapolis Zoo

DURING AN ELEVENTH-GRADE NEW TECH HIGH environmental science/zoology class, a student teacher holds up three large poster boards filled with diagrams, graphs, and text. He tells the class:

> These are examples of the posters that your groups will create as the final product for our zoology project. These have some, but not all, of the required elements. What else do these posters need to convince the staff at the zoo to follow our recommendations about the best habitat, resources, and population density for their animals?

Students immediately launch into a critique of the examples. One student points out that a particular poster is text heavy, providing no graphs or tables displaying information about birth rates, death rates, or any other factors that affect population density. Another student points out that while one poster has many appealing pictures, diagrams, and graphs, it lacks any background text. She also says the poster provides unclear recommendations to the zoo. Then the class comes to a consensus: The poster that offers the most compelling recommendations—though it is not the most visually appealing—has tables comparing the population densities and birth rates of an animal living in the zoo to the same animal in the wild, pictures showing the animal's natural habitat in comparison to its zoo habitat, a written analysis of the comparisons, and clear and concise recommendations that are tied to the analysis.

This project, as well as all others at New Tech, began with a review of an "entry document," which builds a scenario for the project, outlines the problem, defines roles and tasks, and sets expectations for the final product. Frequently, entry documents are written from the point of view of an outside organization that is enlisting the support of New Tech students. In this case, the perspective is that of the president of the Indianapolis Zoo who, in this entry document, asks the students to conduct research on ideal population density and habitat for several species at the zoo and to make recommendations to zoo personnel about improving care of the animals. Students divided themselves into groups of four to complete the project, which will take approximately two weeks.

After their poster discussion, which lasts about 15 minutes, the students in the class join their group members and begin the initial research of the animal they chose to study. In almost every group, one or two students use laptops to conduct web-based research on their animal; one student writes the information on a large whiteboard; and one student acts as a project manager, ensuring the group

is on task and writing down questions that may require further discussion in workshops—a lesson or activity geared toward answering students' questions. As Liza, an eleventh grader, chronicles:

> Throughout a project we will often switch roles—like who is going to manage the overall project and who is going to be on a computer conducting research or taking notes, so that everyone can develop different skills. But for the most part, we work as a team to get everything done, and if we can't figure something out together, we ask our teachers for workshops. Also, in this project and others, we get used to presenting to people outside the school. Most of us know how to go out to a company and present in front of all its workers because we're used to it by now.

Once groups finish gathering all the relevant information on their animal and begin to synthesize the information and generate specific questions about their animals, teachers will provide guidance either to individual groups or in whole-class workshops. Eve Montgomery, the biology/zoology teacher, describes these further explorations:

> A lot of questions, like "What is population density?" students can answer on their own, so we provide them with the time and resources to do that. What we want to do is find out what their deeper questions are, like "How can we determine the ideal population density of a species in a zoo when they are in captivity and are not exposed to any predators?" That's when we step in and provide workshops, so we can have a deeper discussion about their questions.

Before students formulate their recommendations, they will visit the Indianapolis Zoo to talk with the zoo's staff and to assess their animals' current habitats. Students will use a surveyor's wheel to measure the perimeter of the enclosure for each species to determine the square footage and calculate the population density. Groups will then analyze all the information and formulate their recommendations. The project will culminate with each group presenting their analysis and recommendations to the zoo's staff.

Students outline the problem, define roles and tasks, and set expectations for the final product.

➡ **Every student has access to a computer and the internet so they can develop computer literacy skills.**

The idea for the project-based, interdisciplinary classes is that we want students to learn in very similar ways to the way they will work in everyday life.... We also need to give students access to the language in which they were born through digital technology and provide a learning environment with the interconnectedness for what they are used to, which is why we have longer classes. The longer class periods allow students to learn in the framework that's familiar to this generation.

Along with scheduling longer blocks of time for students to fully engage in project-based learning, the school ensures that every student has access to a computer and the internet so they can develop computer literacy skills that are vital for success in the 21st century. The principal offers the reasoning:

> You can't do project-based learning without computers. And you can't give students a glimpse or feel of real-world experiences without computers because no one does their job these days without a computer. For instance, the students learn to use programs like i-Movie Suite, i-Web, and GarageBand to create really amazing products. They can take content that they learn and actually do something with it.

Recently, a group of students used i-Movie to make a documentary film about the Civil Rights Movement and the Voting Rights Act of 1965. They Dressing up in costumes, they re-enacted scenes from the movement and the passage of the act. They also wrote research papers that DeFreese later said "completely blew me away!... The depth of content knowledge and work that came out of this project is far superior to anything students could have produced using only textbooks."

Because New Tech High core academics teachers spend roughly twice as much time with students as they would if the classes were taught in a single-subject format, these educators have opportunities to develop closer relationships with students, as the principal affirms:

> Deeper learning requires deeper relationships with the adults facilitating the learning. If you have adults that can have the time to sit down with the kids, they can build relationships. Our teachers build strong relationships with the kids, and the longer class periods allow teachers to build these relationships.

HOW NEW TECH HIGH ORGANIZES TEACHER TIME

Because New Tech High is an Indianapolis Public School, its teachers work the same contracted day and school year as do all district teachers—from 7:00 AM to 3:00 PM Monday through Friday. New Tech High teachers teach three 90-minute class periods a day and have one planning period. While students are attending electives and lunch in other campus buildings, teachers have a 60-minute common planning period that can be used for individual prep or collaboration and a 30-minute lunch. Says New Tech physics and astronomy teacher Andrew Ringham:

Teachers need the unstructured, common planning time to be able to adapt to the needs of the students as projects progress and questions arise.... In the project setting, a lot of what happens can't necessarily be prescheduled because we turn classroom direction over to the students. We teachers have a loose sketch for what we want to do, and we know the order we would like to do it if we were running the project, but we're not running the project; we're facilitating it for the students to complete. So we always have a sketch or idea of what's going to happen in the middle part of the project but really a lot of that stuff is spent on day-to-day planning.

Twice a week, typically on Tuesdays and Fridays, during the common planning period, Principal DeFreese leads whole-school professional learning community (PLC) meetings that are dedicated to improving teachers' effectiveness at implementing the project-based learning approach. During these meetings, teachers share project ideas and documents as their colleagues follow a "critical friends" protocol, which requires teachers to focus their feedback on specific aspects of the project—specifically, on authenticity, academic rigor, applied learning, active exploration, adult connections, and assessment practices.[20] As DeFreese further explains:

> More time for collaborative planning allows for deeper engagement. If you give teachers more time to work together, you get better results, so we give teachers more time together. The key is monitoring it as an administrator to keep the meetings focused. At New Tech, we use the critical friends protocol to ensure the discussion is focused and relevant and that it keeps moving forward. During the meetings I oversee, teachers present what projects they are going to do in the next couple of weeks and everyone provides feedback. We also train teachers in using group dynamics and to utilize rubrics for assessing student work and to integrate 21st-century skills in their lessons.

In addition to New Tech's PLC meetings, teachers are required to attend district-wide professional development once a month during their planning periods.

ABOUT NEW TECH NETWORK

Originally established in the mid-1990s to ensure the success and sustainability of an innovative high school in Napa, CA, New Tech Network has evolved into a non-profit school development organization that supports 120 schools in 18 U.S. states and Australia. Schools within the network implement a project-based curriculum and also commit the resources to have a one-to-one computer to student ratio. New Tech Network supports schools during the initial planning process, trains faculty and administrators, and provides four years of on-site services.

According to New Tech Network's website, the

New Tech High at Arsenal Tech Graduation Requirements

ENGLISH: *4 years*

SOCIAL STUDIES: *3 years*

MATH: *4 years*

SCIENCE: *4 years*

FOREIGN LANGUAGE ELECTIVE: *3 years*

ELECTIVES: *2 every year*

ACADEMIC INTERNSHIP

SENIOR PROJECT: *Seniors complete a substantial project focused on a topic of their choice*

Students who successfully complete the full body of coursework at New Tech High are eligible for an Academic Honors Diploma, the most academically rigorous diploma offered by the state of Indiana.

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following three design elements help to ensure their schools' success:

→ **A PROJECT-BASED LEARNING IS AT THE HEART OF THE NETWORK'S INSTRUCTIONAL APPROACH.** With this approach, learning is contextual, creative, and shared. Students collaborate on projects that require critical thinking and communication. By making learning relevant to them in this way, student engagement reaches new levels. This higher level of engagement is associated with better educational outcomes.

→ **TECHNOLOGY SUPPORTS THE NETWORK'S APPROACH TO INSTRUCTION AND CULTURE.** All classrooms have a one-to-one computing ratio. With access to Web-enabled computers and the latest in collaborative learning technology, every student becomes a self-directed learner who no longer needs to rely on teachers or textbooks for knowledge and direction. Network schools use Echo, an online learning management system, to create a network that helps students, teachers, and parents connect to one another and to student projects across the country.

→ **A CULTURE THAT PROMOTES TRUST, RESPECT, AND RESPONSIBILITY.** At New Tech schools, students, and teachers alike have ownership of the learning experience and their school environment. Working on projects and in teams, students are accountable to their peers and acquire a level of responsibility similar to what they would experience in a professional work environment.[21]

Time-Design Strategies To Foster Deeper Learning

Rethinking how students and teachers use school time

EACH OF THE FIVE DEEPER LEARNING SCHOOLS PROFILED IN THIS RE-port have redesigned—in some cases, transformed—how students and teachers spend their time in school. Considering time as a flexible resource, these schools have modified several traditional educational conventions, including the structure of a school day and year; the length and number of classes taught; the allocation of preparation, collaboration, and professional development time for teachers; the ways that students and teachers spend their time together; and even the settings where learning takes place. As a result, across these schools, a recurring theme emerges: Within the parameters of each setting, time is organized to foster, encourage, and further the dynamic engagement of students and teachers with one another, with the academic material, and with the wider community. Specifically, in each profiled school, NCTL researchers found five major deeper learning priorities that drive and shape learning time. These priorities are:

1. Building a positive learning environment
2. Using an interdisciplinary, project-based approach
3. Engaging in "authentic" formative and summative assessments of learning and skill development
4. Connecting students to the "real world"
5. Encouraging teachers to work collaboratively and as deep learners themselves in pursuit of excellence

In this section of *Time for Deeper Learning: Lessons from Five High Schools*, we explore the connections between and among these five priorities and the decisions about how time is used in each of the schools featured in the report. We also examine the significant role played by these time-use strategies in teaching deeper learning skills. The priorities, activities, and skills themselves that shape time use at these schools are summarized in the table on page 40. One time use strategy in particular—long instructional blocks—spans several of the priorities and allows students to develop multiple deeper learning skills.

Priority 1

Building a positive learning environment

THE DEEPER LEARNING SCHOOLS THAT ARE profiled in this study approach learning as a process grounded in social relationships. Creating an environment characterized by relationships of mutual trust, respect, safety, and shared expectations of behavior and performance is critical for students at these schools to take the intellectual, creative, and social risks demanded to master the skills of deeper learning. New Tech High ninth grader Anita G. describes how her school has created a welcoming learning environment for its students:

> We build strong relationships, where it almost feels like you're in a family. Because you're with the same facilitators for years, you get more attention and you get to build relationships with them that I don't think you'd be able to build otherwise. And other students—you work with them all the time, so you know each other's strengths and weaknesses, which helps you work together better and motivate each other.

In these deeper learning schools, specific instructional strategies depend on and foster the social learning environment. For example, in order to deliver intensely personal poems as the culminating event of a project focused on creating identity poetry at High Tech High Media Arts (HTHMA), students must feel safe and supported by both their peers and teachers. The use of peer critique and assessment—a practice across all of the deeper learning schools that fosters self-initiated learning and effective communication skills—requires the development of a learning community built on mutual trust and respect. To engage in peer critique as both a "giver" and a "receiver," a young person must feel safe and respected in the learning community and be comfortable with expectations about his/her role in the process. Says Jasmine R., an eleventh grader at HTHMA:

> At first, when I gave my work to other people to critique, I thought, "What if they think I'm stupid?" Then you learn that everyone makes the same mistakes. And it is good to get critiques from people other than your teacher because each teacher has their own point of view. So, if you get feedback from other people, you learn more and go more in-depth. Since you know who did the critique, you can ask them to explain it, and then you meet

Five Priorities of Deeper Learning Schools Shaping Time Use

PRIORITIES DRIVING TIME DESIGN:	ACTIVITIES FOCUSING TIME USE:	DEEPER LEARNING SKILLS EMPHASIZED:
Building a positive learning community that fosters deep relationships among students and teachers	• Adult-facilitated peer groups • Long instructional blocks • Peer mentoring activities • Opportunities for teachers to collaboratively examine and improve instructional practices	• All deeper learning skills, with particular time and attention dedicated to communication, collaboration, and self-initiated learning
Interdisciplinary, project-based learning	• Long instructional blocks • Collaborative work • Student self-managed time	• All deeper learning skills
"Authentic" assessments	• Peer critiques • Guided self-reflection about learning • Student presentations	• Deeper learning skills of critical thinking, problem solving, communication, and self-initiated learning
"Real-world" connections		• All deeper learning skills, with particular time and attention dedicated to self-initiated learning
Teachers as deep learners	• Collaborative inquiry and professional development • Collaborative preparation • Long instructional blocks • Team teaching • Opportunities for informal sharing and discussion	• All deeper learning skills

new people that way. If you only got critiques from your friends, then they might be cautious with you and not want to hurt your feelings. But this way you meet new people. You build more relationships and more friendships. You get to know everyone better because you have read their work and talked to them.

While having a dynamic and positive learning environment is not unique to deeper learning schools—in fact, individual teachers in schools everywhere work hard to build strong learning communities—creating such an environment forms a fundamental component of the educational strategy for each deeper learning school featured in this report and stands as a top priority for these schools' leaders. Across the schools profiled here, the National Center on Time & Learning (NCTL) has identified the following four structural components of time-design strategies, which serve to foster the development of positive learning communities:

1 Peer group time
2 Long instructional blocks
3 Peer mentoring
4 Teacher collaborative time

The table at right, offers examples of how each of the five schools implements these various components of their time-design strategies.

PEER GROUP TIME
Communication, collaboration, and other deeper learning skills flourish when young people belong to supportive learning communities in which they are known by their peers and by adults. Says Codman Principal Thabiti Brown of the particular peer grouping, or "Crew," of eleven boys that he leads:

We have conversations about a lot of things—sometimes academics, sometimes about what it means to be a man of color in today's world. We talk about the curriculum, and community building, and relationships... We take the time we need to work on this so we can do the hard work of everything else.

These deeper learning schools set aside consistent blocks of time for students and teachers to build deep peer-to-peer and peer-to-adult relationships. To organize these peer groups, the schools have pursued a variety of approaches, including:

→ **LONG-TERM:** Codman's Crew and HTHMA's Advisory student groups are maintained throughout the students' years at the schools. ICHS also clusters its students into student/teacher teams that stay consistent for multiple years.

→ **SIGNIFICANT AMOUNT OF TIME:** Crew at Codman meets for 30 minutes per day. Advisory at HTHMA meets twice a week, for 40 minutes each, while Advisory meets one hour per week at ICHS, and Advisory at Avalon meets for 30

minutes per day, split between the morning and afternoon.

→ **SINGLE-GENDER:** At Codman, Crew is organized by gender. Codman leaders have found that creating a single-gender environment accelerates bonding and peer support.

Time-Design Practices of Positive Learning Communities

SCHOOL	HOW TIME IS SPENT
Avalon School	• Advisory groups have 20-minute check-ins at the beginning of the day and 10-minute check-outs at the end of the day. • Mentors spend 2 to 3 hours with a new student the first week of school. Mentors introduce new students to everyone in the school and help them understand the school's approach to project-based learning and how to log their project work hours.
Codman Academy	• "Crew"—single-gender, multi-age, peer groups facilitated by an adult—meets for 30 minutes a day, 4 days a week. • Instructional blocks are two hours long. • Every other Friday, teachers meet as whole faculty and then in grade teams for a total of 3 hours. Students have late arrival. • Content-area teams meet for 1.5 hours biweekly.
High Tech High Media Arts (HTHMA)	• Student/teacher advisory groups meet twice a week for 40 minutes each. • Instructional blocks can last up to 2 hours and 25 minutes. • Teachers have a 45-minute "business strategy" meeting every week to discuss logistical issues regarding project presentations and upcoming events. • Teachers have a 45-minute grade-level team or teaching team meeting every week.
International Community High School (ICHS)	• Students and teachers are clustered in teams. • Within their team, students have "Advisory" once a week for 60 minutes. • Teacher teams meet for 2 hours per week. • Content-area teachers meet for 1 hour per week, and they share their prep time for informal planning, totaling an additional 2-4 hours per week.
New Tech High	• Instructional blocks are 90 minutes long. • Student/teacher advisory groups meet once a week. • The entire teaching staff gathers for a 45-minute professional learning community (PLC) meeting twice a week.

→ **MULTI-AGE:** At Codman, Avalon, HTHMA, and ICHS, the groups are multi-age, providing opportunities for cross-age friendships to develop and also for students to experience multiple roles in the group, including newcomer, group member, veteran, and leader. Students who have been at ICHS longer also have the opportunity to mentor those who have arrived more recently, helping them to navigate cultural and language challenges.

→ **AN ORGANIZATIONAL STRUCTURE FOR SERVICE LEARNING, COMPETITIONS, AND RITUALS:** At Codman, HTHMA, and ICHS, students participate in service learning, rituals, and competitions within these peer groups.

→ **STUDENT-DIRECTED:** Avalon has a 20-minute "check-in" at the beginning of each day and a 10-minute "check-out" at the end of every day. While the agendas are usually set by the advisor, students facilitate these meetings. The students assume the various roles within a group, such as moderator, minute-taker, etc. Students are not elected to these roles; rather, advisors ask different students to take on these roles at different times.

→ **FOCUS EVOLVES OVER TIME:** At ICHS, the ninth- and tenth-grade Advisories focus on identity exploration in the context of the immigration experience and on helping students adjust to the ICHS culture, as well as the academic expectations students should meet. In the eleventh and twelfth grades, the focus shifts to college exploration, planning, and preparation.

→ **PROJECT-CENTERED:** For the junior-senior mentorship at Avalon, seniors choose a junior with whom they want to partner. The junior mentee helps to gather information and prepare their senior mentor's final presentation. Through the mentorship, juniors learn firsthand how the senior project process works.

→ **PERSONALIZED:** Schools deliver individual tutoring, academic counseling, college preparation guidance, and other personalized activities in the context of these groups.

Within these peer groups, regardless of how each individual school structures them, students experience conflict and resolution, receive feedback, engage in self-reflection about their own behavior, and undergo personal growth. Through such experiences, these students forge their self-identity and develop skills for becoming self-initiated learners. They also bring these experiences and relationships back to the classroom, where their new understandings and interactions help support the creation of a strong learning community.
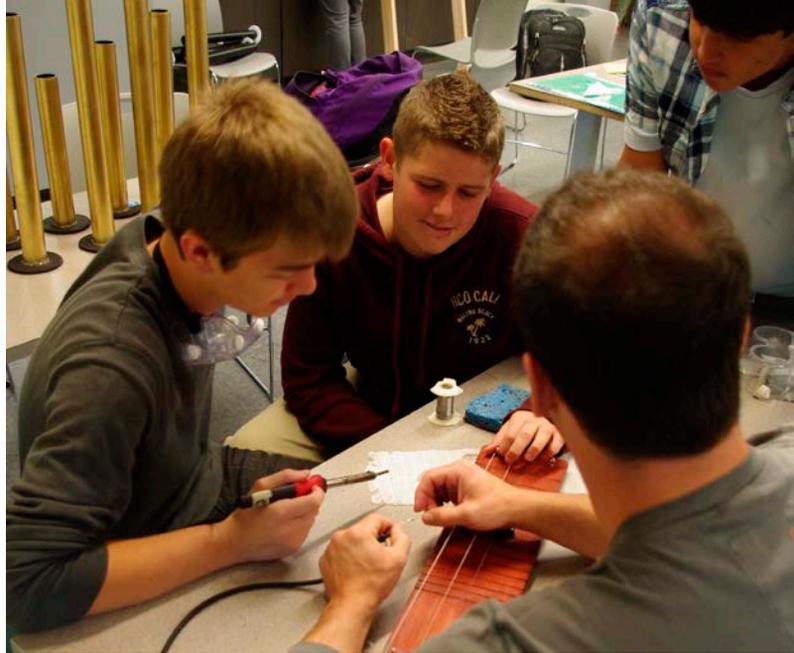
LONG INSTRUCTIONAL BLOCKS

In addition to peer groups, the schools use their long instructional blocks—reflecting combined class periods that are often interdisciplinary and team-taught—to create deep relationships and a positive learning community. (How schools use long instructional blocks explicitly to teach deeper learning skills is explained in more detail under "Priority 2: Using an interdisciplinary, project-based approach," beginning on page 43.)

Leah Ross, a world studies teacher at New Tech High, explains how and why New Tech's longer class periods enable her to work with students to build a "community of learning":

> You have to have kids who are willing to talk and explain what they are thinking about. And you have to have the right climate in your classroom for that. The amount of time we spend with these kids lets them know that this is a safe place for them. We get to a place in one semester—as far as comfort level and feeling safe in the classroom and being able to explain yourself—that it took me a year to get to when I taught in a regular setting. Students trust us because they've been around us for twice as long in that first semester. I think that makes a big difference—it definitely leads to more dialogue, and when you have dialogue, you develop a community of learning, and then you have more collective knowledge-building. That's what happens with more time.

Robert Kuhl, the director of HTHMA, explains that the school designs its schedule so that small groups of students participate in long instructional blocks, taught by a team of teachers, which remain consistent throughout the academic year. Kuhl details:

> When teachers are with the same 25 kids all day long, there is a level of safety and knowing. In comprehensive high schools, kids can choose to isolate themselves, but not here. We try to maximize the relationships by having kids spend more time with one another and with the same teachers.

The longer block also allows time for community-building activities. To create a supportive learning community with relationships that will deepen over the students' four-year tenure at the school, the HTHMA ninth-grade teachers use specific instructional strategies during the extended block, as Diana Sanchez, a ninth-grade humanities teacher, notes:

> We start out with a lot of icebreakers—relationship and community building. We use strategies like pair/share a lot. It is important to personalize the curriculum and not use canned texts or articles that are unconnected to a broader goal; otherwise, students do not identify with it.

PEER MENTORING TIME

To create a welcoming, inclusive environment for students who are new to the school, Avalon students volunteer to be mentors. As mentors, they introduce new students to others and familiarize them with the steps involved in completing projects and the school's online time log. Most mentors volunteer for more than a year, providing the same support they received as incoming students. During their three-hour training over the summer, mentors plan a new student orientation, participate in acting improvisations to learn how to be supportive, and engage in brainstorming sessions to think about Avalon from the viewpoint of someone just entering the school. According to Avalon's annual report:

> The mentorship program has developed many strong student leaders over the years who have helped build a strong, nurturing community. Students who take on the role of a mentor feel invested in the future of the school. They know that their work can help new students adjust to the unique learning environment and eventually become more successful learners and engaged members of the community.[22]

TEACHER COLLABORATIVE TIME

In addition to focusing on peer-to-peer student relationships and student-to-teacher relationships, the deeper learning schools profiled in this report also allocate time for teachers to build a positive learning communities. (Teacher time is discussed in more detail in "Priority 5: Encouraging teachers to work collaboratively and as deep learners themselves," on page 51.) In fact, the major pedagogical approaches of deeper learning schools—such as team teaching and interdisciplinary project-based learning—only succeed in the context of a positive adult learning community. The High Tech High website, for example addresses the importance of relationships in the functioning of its adult learning community:

> We attend carefully to the development of the HTH culture. The reflective discussions that happen at High Tech High do not occur among strangers, and only time

allows such trusting relationships to develop. As our staff become committed to one another and develop consensus regarding both the *how* and the *why* for our collective undertakings, the HTH culture becomes an indispensable resource infusing the organization with the professionalism, energy, and optimism needed to take on ever-growing challenges.[23]

At Codman Academy, relationship building is also key. Meg Campbell, the school's executive director and founder, says,

> We intentionally design the schedule so there is opportunity for building relationships among the staff. We do a lot of role-playing about how to have "courageous conversations." We value rituals and norms, and put a lot of front end work into building a community of practice.

Priority 2

Using an interdisciplinary, project-based approach

Project-based learning (PBL) is defined by the Buck Institute of Education, authors of the *BIE Handbook on Standards-Focused Project Based Learning* and creators of the PBL-online website, as:

> ...a systematic teaching method that engages students in learning essential knowledge and life-enhancing skills through an extended, student-influenced inquiry process structured around complex, authentic questions and carefully designed products and tasks.[24]

The *BIE Handbook* further states that rigorous, meaningful, and effective project-based learning:
- → is intended to teach significant content
- → requires critical thinking, problem solving, collaboration, and various forms of communication
- → requires inquiry as part of the process of learning and creating something new
- → is organized around an open-ended "Driving Question."
- → creates a need to know essential content and skills.
- → allows some degree of student voice and choice.
- → includes processes for revision and reflection.
- → involves a public audience.[25]

Although their specific approaches to PBL differ, these deeper learning schools generally embody the components detailed above. In addition, most of the schools implement PBL, at least part of the time, within an interdisciplinary context. Many projects are team-taught by teachers across disciplines or are designed by students with the guidance of advisors to combine elements of mathematics, science, literature, and arts standards within a single project.

Adherents of project-based learning tout the power of this approach to enable teaching and learning that integrates mastery of standards and academic

material with acquisition of deeper learning skills and knowledge. Project-based work requires intensive, rigorous effort on the part of each student, over long stretches of time. Tiffany Grant, an English teacher at New Tech, notes some of the gains produced when students are given time to tackle difficult problems through project-based learning:

> There is a real benefit to letting kids struggle with a concept or a topic. With a project, we give the rubric at the beginning; next, we give all of our expectations for the final product; and then we let kids choose the path. And so, not only do they think about the content a little bit more, they have to do the problem-solving piece to figure out how they are going to complete the project. The teachers know what the pieces are going to be—we know the next steps, or at least the most efficient next steps. But letting students figure out their path develops 21st-century skills and deeper thinking.

As Kenneth, a senior at New Tech, attests,

> Project-based learning includes 21st-century skills like collaboration, critical thinking, presentations, etc., and what that does is actually get you prepared for real-world life, because in the real world you're going to be presenting things and working with others.

The deeper learning schools in this report use the following three specific time-design strategies to support interdisciplinary, project-based learning:

1. Long instructional blocks
2. Time for students to collaborate on projects
3. Self-managed time

The table below gives examples of these strategies, as they are realized within project-based settings at each of the five schools.

LONG INSTRUCTIONAL BLOCKS

The daily schedule of many deeper learning schools includes longer instructional blocks than are commonly seen in secondary schools. Some of the schools featured in *Time for Deeper Learning* offer these longer blocks by combining the 45-60 minutes allotted for each discipline into one 1.5–2-hour interdisciplinary, extended instructional block team-taught by two teachers. The longer blocks enable the teachers to mix instructional strategies—such as introducing and facilitating projects and/or providing direct instruction on specific concepts, which they variously call "mini-lessons" or "workshops"— to small groups of students. During the longer class periods, the teachers also have opportunities to do quick check-ins with individual students on academic and non-academic matters. Students are working sometimes in small groups and sometimes independently, engaged in research, reading, writing, discussion, and giving and generating feedback. Andrew Ringham, the physics and astronomy teacher at New Tech High, values these longer periods:

> I think it's essential for us to have longer blocks. It encourages deeper learning than you would see in a traditional classroom because you have two subjects integrated and contextualized within each other: So, you learn them together. All of that takes time to teach. Any activity we do, it's integrated and project-based. There

An Interdisciplinary, Project-based Approach

SCHOOL	HOW TIME IS SPENT
Avalon School	• On average, high school students spend between 3-4 hours a day working on self-guided projects that integrate state standards from multiple content areas.
Codman Academy	• Students engage in expeditions—long-term, in-depth studies of a topic—in most disciplines. • Humanities [integrated history and English] is taught as a two-hour class, four days a week, for all four years. • For all students, every other Friday is reserved for a full day of offsite expedition-related work. • The "Senior Talk" is a culminating identity development project required of all students.
High Tech High Media Arts (HTHMA)	• Math/Physics and English/Social Studies are team-taught in two 145-minute integrated core subject blocks daily. • Student voice, choice, and purpose are built into projects, with students as co-creators. • Blocks of instructional time are self-managed by students, and students almost always work in project groups.
International Community High School (ICHS)	• Classes are taught in subject-specific one-hour blocks, with English language learning and collaborative time integrated into every subject. • Teachers in interdisciplinary teams create intentional connections across disciplines by using common strategies for teaching writing and academic language. • At certain times of the year, students work independently on portfolio preparation within class time.
New Tech High	• All students take 90-minute class blocks for interdisciplinary English/Humanities and Math/Science. • Seniors create and present a portfolio of their work since freshman year, exploring their growth throughout high school.

are lots of connections students have to make that just couldn't happen in 45 minutes.

Ed Yoo, a tenth-grade physics teacher at Codman Academy, spends an entire trimester (three months) with his class focused on a circuits unit. Yoo says, "We can delve more deeply into it because we have the longer instructional block." His class meets 1.5 hours on Monday–Wednesday, 1 hour on Thursdays, and 5 hours every other Friday, which are mostly spent off-campus doing fieldwork. Yoo details:

> In other schools they might do circuits for two weeks. The students will learn how to plug numbers into a formula, and that will be on the test. But if you asked them "How do you increase the resistance?" or other types of questions that require them to apply their knowledge to new situations and think critically to solve problems, they would not know. We have time to help them make those kinds of connections and learn how to apply the concepts they are learning in the real world.

To complete the fieldwork, Yoo's students work in teams to design, build, and test turbine blades made of recycled materials, and use the University of Colorado at Boulder's PhET Interactive Simulations website to design various mixed circuits that satisfy specific design criteria, tackling progressively more difficult problems.[26] The unit culminates with each student explaining the difference between series and parallel circuits, as well as graphs, showing the relationships between voltage, current, and resistance using Ohm's Law as part of their tenth-grade portfolio presentation.

TIME FOR STUDENTS TO COLLABORATE ON PROJECTS

Project-based learning requires students to collaborate with their peers, almost all the time. The five deeper learning schools featured in this report are teaching students specific collaborative skills as they begin to understand how to complete projects. For example, several of the schools assign group roles to ninth graders, complete with titles and job descriptions. At Codman, the roles are spokesperson, resource person, coordinator, and recorder. Teachers check-in frequently to ensure that students are playing their roles effectively.

At ICHS, collaboration is a particularly important skill for students to learn because the school's model relies on students working collaboratively to benefit from the diversity of their classmates. The Internationals Network model recognizes this value:

> ...students who are not proficient in English or who have low literacy skills do not lack cognitive or intellectual capacity and come to school with rich and varied experiences and perspectives to offer. When they work on collaboratively structured projects, students have the opportunity to study a problem in depth and to work in an environment in which variety is expected.[27]

During the 2011 school year, the ICHS teachers filmed themselves working as a group to model collaboration and asked the students to analyze their performance and provide suggestions for improvement. As ICHS students progress, the explicit instruction from teachers on how to collaborate effectively is scaled back, and students take a larger roll in managing their individual roles and group dynamics. Teaching the skills students need to collaborate effectively is a critical component in their becoming more self-regulated learners. A 2012 report from the National Research Council, *Education for Life and Work*, points out that "the abilities and beliefs underlying self-regulated learning are developed through social processes...seeking help from peers or teachers, working in groups, and other aspects of collaboration (Newman, 2008) Wolters (2010)."[28]

SELF-MANAGED TIME

Another significant dimension of becoming a self-regulated learner is the ability to manage work time independently. Students in the five deeper learning schools profiled in this report are themselves directing significant blocks of their project work time. Avalon School is unique in that almost all of the project time there is student–directed. At Avalon, students either work independently or form their own peer workgroups based on areas of common interest. Individual students initiate and design their own interdisciplinary projects, formulating core project questions that map to the state academic standards. The school's teacher-advisors offer input and guidance on project design, provide content knowledge, and help students develop time management skills. For example, after a student has chosen a topic for a project, an advisor will help the student divide the project into manageable tasks and then hold the student accountable to specific completion dates.

The Avalon School model poses challenges whenever students do not complete work and/or projects as they are expected to do. But as Kevin Ward, an Avalon teacher-advisor points out, becoming a self-initiated learner requires experiencing the consequences of failure:

> You have to keep handing over more and more responsibility to the student, and there are just some people who don't trust students to be able to make good decisions if given the opportunity to do so. And the whole point is that that's how they learn to make decisions. The key to success is failure...because then students figure out what's really important to them.

Self-managed time is also a significant educational component at High Tech High Media Arts (HTHMA), where Nicole T., an eleventh grader, describes how she learned to manage her own time the hard way:

Authentic Formative and Summative Assessment

SCHOOL	HOW TIME IS SPENT
Avalon School	• Students are required to give three presentations every year—one public presentation open to the community and two presentations during either seminar or advisory periods. • For every project a student completes, the student must write a reflection about what he/she learned and then revise the reflection after receiving teacher-advisor feedback.
Codman Academy	• Guided self-reflection focused on learning skills is integrated into the pedagogical approach across all disciplines. Timing varies depending on the specific method used. • At the end of their tenth- and twelfth-grade years, students individually present their portfolios—all of their work for the year—to a panel consisting of ninth and eleventh graders, teachers, parents, school leaders, and members of the community. • Students present to their peers in groups and individually at key points and at the end of every expedition and project.
High Tech High Media Arts (HTHMA)	• Peer critique and self-reflection are built into every project, although the specific strategies used and time spent vary. • Students present their work in class regularly and publicly at exhibitions at least twice a year; they also complete a Transitional Presentation of Learning at the end of every year. • Students present to their parents and engage in self-reflection about their work and learning skills twice a year in parent-teacher-student conferences led by the students.
International Community High School (ICHS)	• Students present their portfolio of work to peers and teachers two times each year (20-minute presentations, followed by 10-15 minutes of questions from the panel, which includes peers). • The graduation portfolio presentation is a 30-minute presentation, followed by one hour or more of questions. Students provide a self-assessment to the panel before they hear the panel's critique. • Peer critique and self-reflections are built into classes, although the specific strategies used and time spent vary.
New Tech High	• Evaluation and self-reflection are built into every project. Students are evaluated throughout the project process, after using rubrics aligned to the school-wide learning outcomes (citizenship and work ethic, collaboration, critical thinking, and presentation skills), and also according to their mastery of course content. • All projects end with an exhibition of learning. Students present their projects in class and/or to organizations that were involved in the project.

The teachers will say the project is due in two months, and we are free to use that time how we want. When you are a freshman you don't know you should start working on it that first day. We learn time management through experience. Our first year we were making an electric guitar, and the last week [of the project] I was just crying and really stressed out. We had to experience a new way of learning. We needed to figure out who we are and how we learn.

Priority 3

Engaging in "authentic" formative and summative assessment of learning and skill development

Educators at the five deeper learning schools spend a significant amount of time assessing students' academic knowledge and mastery of deeper learning skills. They engage in summative assessments at transition points, such as the end of a project or a semester, and in formative assessments throughout the process of completing their projects. At these deeper learning schools, specific summative assessments of students' deeper learning skills occur alongside

assessments of content mastery. For example, New Tech High uses rubrics to assess citizenship, a student's work ethic, collaboration, critical thinking, and presentation skills throughout the project process. The rubrics used there guide students toward high-quality work and help them determine their strengths and areas for growth.

Formative assessments that include peer critique and guided self-reflection are also integrated into the project-based approach. As explained in the National Research Council (NRC) 2012 report, formative assessment is a critical tool for ensuring that students acquire deeper learning skills. Not only do formative assessments help teachers understand at critical points what students know and are able to do, the assessments also give students feedback in ways that promote their further skill acquisition. The NRC report states:

Individuals acquire a skill much more rapidly if they receive feedback about the correctness of what they have done. If incorrect, they need to know the nature of their mistake. It was demonstrated long ago that practice without feedback produces little learning (Thorndike, 1927). One of the persistent dilemmas in education is

that students often spend time practicing incorrect skills with little or no feedback. Furthermore, the feedback they ultimately receive is often neither timely nor informative. Unguided practice (e.g., homework in math) can be, for the less able student, practice in doing tasks incorrectly.[29]

Largely within the longer instructional blocks, teachers in the five featured deeper learning schools engage in formative assessment by requiring students to explain and justify their reasoning, by responding to student thinking and drafts of work products, and by providing commentary and deeper explanations of material that help students move into more complex understanding. Ed Yoo, the tenth-grade physics teacher at Codman Academy describes the process:

> Here we have time to engage in formative assessment and see what they know and what they do not know. It's important for us as teachers to have the time to reassess and identify the knowledge gaps. Sometimes we don't know if they do not really know the material, or the problem is in the way we asked the question.

Active student involvement is critical to formative assessment. The time is spent not just to enable teachers to gather information, but also to push students' acquisition and development of deeper learning skills. In her 2010 brief for the Council of Chief State School Officers, Margaret Heritage, Assistant Director for Professional Development at the National Center for Research on Evaluation, Standards and Student Testing, states:

> [T]he teacher's role in formative assessment is not simply to use feedback to promote content learning, but also to help students understand the goal being aimed for, assist them to develop the skills to make judgments about their learning in relation to the standard, and establish a repertoire of operational strategies to regulate their own learning.[30]

The deeper learning schools profiled in this report allocate time for three particular practices in order to ensure authentic assessments of learning and skill development:
1. Peer critique
2. Guided self reflection about learning
3. Student presentations

The table on page 46 describes these practices by offering examples from each of the five schools.

PEER CRITIQUE TIME

The entire High Tech High Media Arts faculty has been working together to improve the student peer critique process, a method of formative assessment that involves students receiving and providing critiques on one another's work. The school also frequently structures opportunities for critique by other stakeholders, such as parents and community members. HTHMA Director Robert Kuhl talks about the purpose behind this process:

> Having students critique one another's work and listen and respond to critiques are fundamental ways we build student engagement and development of their skills as critical thinkers. Peer critique is also a strategy for using time more efficiently. If a teacher is the only person giving feedback, there is a bottleneck. If everyone gives feedback…then time is used more effectively and kids are spending more time using their voice, learning the skills, deepening their relationships.

HTHMA humanities teacher Randy Scherer adds:

> Students may receive anywhere from three to seven critiques on one paper, including an outside critique, such as from a parent. Students do not choose who they will be critiquing, or who will critique them. We use critique sessions as an instructional strategy for analyzing strengths and weaknesses in student writing and building communication and critical thinking skills.

Josh Krause, an HTHMA digital and media arts teacher, describes the role and methodology of critique to his students in his spring 2012 syllabus:

> The very nature of art-making is trial and error, critique, discovering and acknowledging strengths and weaknesses, and figuring out our individual best practices and favorite mediums…. This semester we will be doing regularly scheduled all-class critique sessions. We will use compassion and kindness, as well as the appropriate art vocabulary and terminology, during the reviews. I ask that we each check our egos, differences, and biases at the door and approach this process with fresh eyes. Part of growing as an artist and as a person is hearing things that are hard to hear, as well as finding specific and helpful ways to say those things that are hard to say.[31]

At Codman Academy, peer critique focuses on stimulating students to ask questions of one another that require critical thinking on all sides of the conversation. Time is reserved during project and class work for students to present to peers, on their own or in groups. Students evaluate the presentations using a rubric and also gain practice in posing good questions. As tenth graders practice their monologues for the August Wilson Monologue Competition (named for the Pulitzer Prize- and Tony Award-winning playwright), or when ninth graders try-out their pieces for the national Poetry Out Loud competition, both as part of the school's Huntington Theatre partnership, peers are taught how to offer constructive "notes" for each performer during rehearsal time.

International Community High School (ICHS) uses a somewhat different approach. Rather than having each group of students present to the entire class, teachers set up multiple stations in the classroom, so that different groups are presenting at each

station simultaneously, as other groups of students travel from station to station to provide critique. This strategy enables groups to get in more presentation practice and to hear more critiques.

TIME FOR GUIDED SELF-REFLECTION

At HTHMA, students conduct a guided reflection of their own work after completing each project. HTHMA Director Robert Kuhl offers insight into the school's rationale on self-reflection, saying, "The learning process consists of struggles, challenges, reflection, and growth. Without reflection, people flounder and the learning does not sink in." As one HTHMA student chronicles,

> After every exhibition, we sit down and write our thoughts. Our teachers will say, "You have two minutes. Write everything you can…Reflect upon it and just tell me what you feel. Just keep writing. It's not for anybody but you." This really helps us grow…

When asked about their experiences, students at many of the deeper learning schools often spontaneously reflect on their own learning progression. For example, student Anika G. of New Tech recounts the evolution of her ability to work in a group:

> I can now compromise with people, and that is a very necessary skill you need to have to succeed. I've learned that it's not only my opinion that matters. I have to listen to other people's opinions, and I also have to have reasoning and support my own ideas and opinions if I want them to be incorporated in our projects.

Having students critique one another's work and listen and respond to critiques are fundamental to developing their skills as critical thinkers.

And an HTHMA senior explains how he integrates his own form of reflection into the longer class time at his school:

> When you have only an hour, you're rushed. You have to get it all done. But when you have a 2-hour block you can say to yourself, "You know what, I need a break for a second. What did I like? What didn't I like? Let me write this down. Let me brainstorm. Let me think about it."

Once Avalon students have completed a project, they reflect on what they learned, how they learned it, how they would complete the project differently next time, and what they now know about themselves as learners. They also reflect on what worked and did not work well in their group efforts. Their completed projects are then assessed using a rubric that the student(s) developed when the project was first approved. Presentation nights are scheduled once a month for students to present their completed projects. At Codman, the last three to five minutes of every class is reserved for "kudos and deltas," where these students self-reflect on what went well and what they would want to change about the class and their own participation in it. All of these reflections develop what the National Research Council 2012 report authors define as "metacognition" or "taking responsibility for one's learning, stamina, and persistence," a key skill set for becoming a self-initiated learner.[32]

TIME FOR STUDENT PRESENTATIONS

How do deeper learning schools integrate time for summative assessments of deeper learning skills? During school visits conducted by NCTL, the familiar paper-based multiple choice, essay, and computation tests were in evidence; yet, NCTL also found students presenting complex work products and portfolios to diverse audiences, including teachers, peers, school leaders, community members, and

representatives of partner organizations. Time for presentations is built into these schools' schedules—usually involving early release days, which call for sending home all the students not participating in presentations that particular day, thereby freeing up teachers to spend concentrated time with the small group of students who are presenting. An HTHMA tenth grader especially appreciates the additional support this time provides:

> At the end of the year there is a Presentation of Learning. Last year I had stage fright. We had to present in front of the teachers, students, and our families. Now I am not scared. I can do it. There are guidelines we follow; you have 15 minutes to present what you have learned all year. If you don't pass, you go to summer school.

ICHS has a similar requirement in its portfolio presentations. Each student gives a 20-minute talk presenting what she/he has learned over the course of the semester and using a theme to connect the material. The talk is followed by 10-15 minutes of questioning from teachers and students in the audience. Increasing the challenge, the ICHS senior portfolio presentation is 30 minutes long, and is immediately followed by at least 1 hour of discussion. The presentations are assessed using a rubric that the school developed for this purpose.

Priority 4

Connecting students to the "real world"

In the 2012 National Research Council report, one of the instructional strategies recommended to facilitate deeper learning and 21st-century competencies is to "prime student motivation by connecting topics to students' personal lives and interests, engaging students in collaborative problem solving, and drawing attention to the knowledge and skills students are developing, rather than grades or scores."[33]

When students are immersed in the external community, it can catalyze their self-discovery. When students are required to perform in unfamiliar social contexts, they begin to explore their own interests and assess their own skills and knowledge—both key components to their growth as learners. As Leah Ross, a world studies teacher at New Tech, notes:

> It doesn't matter what industry you are in. You are multitasking and doing things in a multidisciplinary way. So for us to teach these subjects as stand-alone things is not authentic. And part of the [New Tech] model is really making a connection for the student between what they do in the classroom and what is done outside of the classroom. The closer we get to that as educators, the more buy-in we have with the students.

"Real-world" Connections

SCHOOL	HOW TIME IS SPENT
Avalon School	• Seniors collaborate with professionals from the community ("community exporters") throughout the year to complete their senior projects. • Advisory groups work on community service projects for a week.
Codman Academy	• School organizes two-week internships for juniors amd seniors (required for juniors, optional for seniors) • Every Friday, all students participate in off-site project work and service learning. • Students must complete two summers of approved enrichment programs. • Annual mandatory 3-day all student/staff/faculty community leadership and character development retreat is held at Camp Merrowvista in New Hampshire. • Expeditions are closely connected with external community.
High Tech High Media Arts (HTHMA)	• Junior and senior internships run for 3.5 weeks. • Every year before spring break, students participate in "One World Week." During this week, students go on trips in and around San Diego, CA, or abroad, to experience the culture of another country or to help with the community service projects. • Projects closely connect students with the external community.
International Community High School (ICHS)	• Juniors participate in full-day, offsite internships 10 Fridays each year as part of a year-long, two-hour/week internship class. • Students are required to include real-world connections across academic disciplines during their portfolio presentations. • Advisory groups complete community service projects.
New Tech High	• Each project is tied to a challenge that a company or organization faces, and students strive to produce projects of value to the community and project partner. • Seniors must complete 50 hours in a community internship.

Students in deeper learning schools experience learning outside the school walls—both concretely, through an array of internships in the local community, and virtually, through diverse projects that connect them to resources and activists across the globe. The five schools featured in *Time for Deeper Learning* dedicate time for students to explore "real-world" connections through:

1. School-based projects that are closely connected with the external community
2. Off-site internship and community service experiences

The table on page 49 describes some of the ways that students forge such real-world connections,   using examples from each of the schools.

SCHOOL-BASED PROJECTS CONNECTED TO THE "OUTSIDE WORLD"

All five profiled schools, and the networks to which they belong, have in common a pedagogical focus on projects connected to the world outside the school. For example, Avalon seniors design and complete an intensive year-long project in an area of their own interest. Each project is guided by a "community expert," whom the student has identified and asked to become involved. For example, Sage R., a prospective artist, worked with a local artist to learn about the art community in Minneapolis/St. Paul. The Avalon senior titled her project "In Search of a Well-Fed Artist" and focused her efforts on exploring how artists make a living.

To produce her culminating project, Sage acquired use of a gallery space and gathered art from local and national artists. She created the written material for the exhibition, and, in the process, she learned about the economics of art because she had to value the art pieces. The "expert" who was guiding Sage also connected her with several artists from the local community to learn more about how artists live and how they are able to make a living selling their artwork. Reflecting on what Sage learned doing the project, her local artist guide says:

> Sage discovered through this project that her real interest is in arts management—running a gallery and curating exhibitions. Because senior projects are self-driven, students can figure this all out on their own. They need to go out, find all the people who are going to help them, research all the things that they are interested in. Every single aspect of this project is on them. And so they learn the skills of gathering around them people that can help.

By integrating projects into the external environment, all five of these deeper learning schools are able to hold their students to a professional standard. Thabiti Brown, the principal of Codman Academy, highlights this connection for his school:

> One of the core tenets of Expeditionary Learning is that students create authentic products whenever possible. If we are teaching the students to understand measurement or distance or slope we are going to build a real thing. It has to actually meet the qualifications that a professional would want in the real word.

Describing Codman's partnership with Boston's prestigious Huntington Theatre Company, where all tenth graders are required to prepare and present a Shakespearian monologue to an audience composed broadly of community members and theatre goers, Brown explains, "The audience is coming to see Shakespeare, not just kids performing. The students are creating authentic products all throughout."

INTERNSHIPS AND COMMUNITY SERVICE EXPERIENCES

Codman Academy, High Tech High Media Arts, International Community High School, and New Tech High all require juniors and/or seniors to complete an off-site internship. These schools set aside significant chunks of school time for internships, ranging from nearly a full month at HTHMA to ten Fridays a year for ICHS students.

At HTHMA, through their Advisories, juniors work with faculty and staff advisors to find an internship that matches their interest. Seniors are expected to identify and secure their own internships. HTHMA staff provide orientation and support for internship supervisors and approve the students' work plans. One of the goals of the HTHMA internships is to immerse students in a professional culture. Students are expected to work standard work hours—up to a 40-hour week. They return to HTHMA for two half-days during the internship to engage in guided reflection on their internship experiences and to work on their internship portfolios. At each worksite, meanwhile, students collaborate with their mentors to develop a substantial project that contributes to the organization. Mentors are expected to hold a bachelor's degree, or higher, and to share the story of their own educational and professional career path with their particular HTHMA intern. The internship culminates with the students' "Presentation of Learning," where each intern presents his/her work and overall learning to a panel of mentors and other site employees.

This culminating event celebrates the individual student's accomplishments and offers an occasion for reflection and critique. According to Robert Kuhl, the school's director, the internships give HTHMA students the opportunity to "enter the world of people with college degrees. It is a foreign world, so they come back transformed." Affirms Taylor P., a junior, "That's what HTHMA is: They put you in the real world, then pull you back and see if you learned something; they give you time to reflect on it."

With a different time allocation and structure, ICHS requires its tenth graders to take an internship

class that meets two hours a week, in addition to participating in a full-day internship on Fridays. In total, students spend 10 Fridays over the course of the year off-site at their internship location, while other time is dedicated to creating resumes, engaging in career and college exploration, and developing individual student websites with essays reflecting on the internship experience.

At Codman Academy, students engage in service learning through their "Crews." At least one full school day per year is spent offsite in service learning, and then students engage in follow-up academic work related to the project. For example, students recently decided to clean up the school's surrounding Codman Square neighborhood in Boston. They also researched city sanitation and recycling procedures and policies and designed and ran a year-long project, where they spent four half-days at a local elementary school reading and talking with young students. All these projects are designed and implemented by the students themselves, with staff support. Each project's design phase happens during the 30 minutes per day of Crew time.

Every May, Advisory groups at Avalon participate in a service-learning week. Students in each Advisory work together to come up with service ideas and advisors facilitate the contacts, develop learning opportunities, and handle logistics. This year, one group planted a garden at the school; another visited various organizations in the Minneapolis/St. Paul area to work with animals; and a third group went to a camp in Wisconsin to help paint cabins, pull weeds, and fix horse stables. In addition to helping the surrounding community, service week also provides opportunities for students to connect and build a stronger school community within the school. "Service week is a great way to bond with your Advisory," a twelfth-grade student comments. "It helps everybody come together, and it feels good to be helping people alongside your fellow students and friends."

Priority 5:

Encouraging teachers to work collaboratively and as deep learners themselves

Successfully teaching deeper learning skills requires teachers to be deep learners themselves. The Partnership for 21st Century Skills 2009 MILE Guide asserts: "Teachers must move from isolation to connection, creating an optimistic educational culture that positively impacts student learning. Teachers must have ways to refine their knowledge and skills in collaborative, supportive environments."[34]

Along similar lines, the Alliance for Excellent Education, in its July 2012 report *Culture Shift: Teaching in a Learner-Centered Environment Powered by Digital Learning*, outlined the new roles that teachers play in learner-centered environments:

→ **FACILITATORS OF LEARNING:** "Teachers can guide students in their learning and help them navigate information and resources and understand content; they can also help students think about and create their own knowledge base."

→ **USERS OF DATA AND ASSESSMENTS:** "Based on effective use of data, teachers can make decisions about what a student needs to learn and the most appropriate content and activities to support deeper learning."

→ **COLLABORATORS, CONTRIBUTORS, AND COACHES WITH PEERS:** "Teachers have the opportunity to work in teams to better understand specific students, to collaboratively plan lessons or cross-curricular projects, to learn together, and to ensure that all efforts are in line with the school improvement goals."

→ **CURRICULUM ADAPTERS AND DESIGNERS:** "Teachers can develop project-based learning opportunities that provide for cross-curricular learning that is often more relevant to the students."[35]

And, in *Teachers At Work: Six Exemplars of Everyday Practice*, the brief from the Nellie Mae Education Foundation that examines the learner-centered environment in six high schools, authors Barbara Cervone and Kathleen Cushman report that they also saw teachers playing learning-centered roles, such as curriculum planner, classroom facilitator and coach, assessor, advisor, connector, and communicator.[36]

It is noteworthy, though not surprising, that NCTL researchers found teachers in the profiled deeper learning schools playing a multitude of roles, and we realized that scheduling and time allocation play a critical role in facilitating the teachers' abilities to do so. All of the schools visited reserve significant time for collaborative professional development and inquiry, joint planning and preparation, team teaching, and informal collaboration time. Teachers use that time to learn how to play the expanded roles required of them, and they benefit from the support of their colleagues in developing the skills they need to be effective. In fact, the same strategies teachers use with students—including peer feedback, self- and group-reflection, and problem-solving techniques—are employed by individuals and teams of teachers to imagine and implement better ways of facilitating student learning.

In interviews, teachers from across these schools repeatedly pointed out how important this time for collaboration and professional development is to them and how critical it is for school leaders to set

cultural norms that respect this time. As Danielle Denufrio, a ninth-grade teacher at Codman attests, "Our meeting time is sacred. We don't get pulled away to do other things." The theme that runs throughout teacher time in these deeper learning schools is collaboration. As teachers work in teams, they develop the skills to create a collaborative classroom through experiencing the collaborative structure themselves.

The five deeper learning schools featured in this report devote time for teachers to develop their own abilities to teach deeper learning skills through:

1. Frequent opportunities for teachers to meet to problem solve, give and receive feedback, and share ideas

2. Schedules that allow for co-planning and preparation by teams of teachers

3. Dedicated time for professional development
The table below describes these practices, using examples from the five schools.

FREQUENT OPPORTUNITIES FOR TEACHERS TO MEET
These deeper learning schools have weekly or bi-weekly teacher meetings, by grade level, by discipline, and/or in small teacher teams, in addition to formal professional development time and time for individual teacher prep. The time set aside for teacher meetings ranges from a total of 1.5 to 3 hours per week. At these meetings, groups of teachers and school leaders investigate problems of practice, and they work together to generate and implement ideas. They also discuss the academic progress and social issues of individual students, align curricula scope and sequence, and resolve scheduling concerns,

Teachers Working Collaboratively As Deep Learners

| SCHOOL	HOW TIME IS SPENT
Avalon School	• Advisors have curriculum meetings every Wednesday between 8:00 AM – 9:00 AM and whole school faculty meetings every Thursday between 7:45 AM – 9:00 AM. • Because two advisors share a room and most teach very few seminar classes, they have the flexibility to collaborate multiple times throughout the day, as needed. • Advisors are also expected to be at school at least a half-hour before the school day begins and to stay a half-hour after the school day ends, which allows them additional time to connect informally. Most independent planning takes place before or after school.
Codman Academy	• Every other Friday, teachers meet as whole faculty and then in grade-level teams for a total of 3 hours. Students have late arrival. • Teams meet by academic discipline for 1.5 hours bi-weekly. • There are three to five professional development days for teachers over the course of the year. • Teachers have one full week of professional development/collaborative meetings at the end of school year. • Teachers also have two weeks of professional development and planning in August. • Members of the ninth-grade team have designated office space next to one another and 1.5 hours of common prep time each day.
International Community High School (ICHS)	• Teachers meet in interdisciplinary teams for 2 hours per week, while the students participate in partner-led arts programming. • Teachers meet by academic discipline for 1 hour each week in formal department meetings and for informal prep time 2 – 4 hours per week. • Once a month, ninth- and tenth-grade teachers have a full day of professional development off- or on-site, often devoted to peer observation and joint curriculum development. • Eleventh- and twelfth-grade teachers have an additional PD period per week that cumulatively equals one day a month. • Teachers have monthly opportunities to observe at other Internationals network schools. • New teachers attend the Internationals Summer Institute for two full days, and all teachers attend the Internationals PD seminar that falls on Election Day (unless their team has designed a different applicable PD opportunity). • Teachers attend professional development in January of each year, hosted by the Consortium of New York Performance Standards. • In June, each department delivers a portfolios presentation to peers and school leaders on the work that members of that department did throughout the year and on their goals for the upcoming year.
High Tech High Media Arts (HTHMA)	• Teachers have 45 minutes/week to conduct a "business strategy" meeting. • Teachers also have 45 minutes/week for grade-level or content-area meetings. • One hour of professional development is scheduled each week. • Twice a month, students start 1 hour late to enable whole-school professional development. • There are 5 to 7 whole-school collaborative professional development days per year.
New Tech High	• Teachers have 60 minutes of common planning time every day. • Twice a week, during their common planning time, the entire teaching staff gathers for a professional learning community (PLC) meeting led by the school's principal.

along with addressing many other topics.

Teachers in these five schools strive to balance the need for them to address logistical matters with their desire to focus on deeper pedagogical challenges. Often, they employ strategies for running effective meetings, such as setting norms, following agendas tightly, assigning facilitators to keep discussions moving, and checking on follow-through to commitments made at earlier meetings. The Codman ninth-grade team, for instance, created a strategy to reserve time in their biweekly 1.5-hour meetings to focus on teaching practice. Sydney Chafee, the ninth-grade humanities teacher, chronicles:

> This year, we are each doing an informal observation once a month, and we debrief in our staff meeting. We ask ourselves during the observation: "What am I noticing?" And then we follow-up with the teacher—"What was your plan?" This motivates us to address core teaching and learning issues in our department meetings and not let [the meetings] become just focused on tasks.

At High Tech High Media Arts, as a recent, regular, 1-hour weekly meeting of the school's humanities teachers illustrates, such professional gatherings are a source of support and ideas for teachers. At the meeting, one of the teachers presented a problem to her colleagues for discussion through a tightly controlled facilitation framework that would ensure they would get to solutions within 60 minutes. She was about to launch the "Spoken Word" project with her ninth graders, the teacher recounted. The project, which challenges students to compose and ultimately to perform identity poetry that is often intensely personal and confronts traumatic themes, can play a powerful role in unifying the class community as they complete their first year of high school. This teacher was concerned about a small group of students whom she feared would destroy the emotionally safe space that is needed for students to participate fully in the project. Together, the HTHMA teachers spent an hour in intense discussion of this complex social and academic problem and generated ideas for possible solutions, including entering into a contract with the potentially disruptive students, contacting their parents, and finding ways to motivate the other 90 percent of students so that they refuse to accept the negative behavior.

Engagement in a community of inquiry such as this attracts teachers to deeper learning schools, particularly given the camaraderie that develops over time among adults. As the HTHMA teacher who brought the problem to the group attests:

> When I taught at a comprehensive high school, I was given a binder with every lesson in it. The curriculum was completely test-driven. But if there is no room for critical thinking on the part of the teacher, how can we teach our children to be critical thinkers?

SCHEDULES THAT ALLOW TEAMS OF TEACHERS TO CO-PLAN AND PREPARE

In their recent report, *Teachers At Work*, Barbara Cervone and Kathleen Cushman found that teachers consider frequent common planning time to be the most important structure supporting their professional success in student-centered environments. The deeper learning schools profiled in this report have arranged their schedules to enable teachers to have common planning and preparation time at least several times a week, especially those teachers who are team-teaching an interdisciplinary course in one of the longer instructional blocks.

New Tech High teacher Mark Mendoza (English), who team-teaches an interdisciplinary block with Paryis Hously (History) explains: "Our common prep time means that we can effectively plan, create a calendar and schedule, and say, 'How do our standards align with each other? Where can we match up different lessons?'" During common planning time, teachers at New Tech use a "critical friends protocol," which was developed by the New Tech Network, to evaluate one another's projects.

At Codman Academy, pairs of ninth-grade teachers who teach the same students also have common planning time. Sydney Chafee, the humanities teacher, remarks:

> We use the common planning time to connect curricula, and we also meet with individual students together to focus on their performance and learning skills. When students see both of us there for the meeting, they are usually paying close attention and taking it seriously.

Not all co-planning at deeper learning schools takes place in structured collaboration meetings, however. In fact, many teachers across these schools seek out feedback and ideas from their peers through informal conversations. Indeed, school leaders believe that providing these types of opportunities for informal collaboration is of such importance that many of them co-locate offices of teachers who team-teach interdisciplinary courses.

DEDICATED TIME FOR PROFESSIONAL DEVELOPMENT

Professional development time in the deeper learning schools featured in this report range from four to nine full days per year. Each of the schools that NCTL researchers visited is a member of a network that provides professional development for teachers and school leaders, and each of these schools invests teacher time in taking advantage of these resources. The networks are important sources of professional development, because the roles of teachers and administrators in the deeper learning schools differ substantially from more conventional school models. Teachers must understand, for example, how to lead project-based learning teams—without determining process or revealing results —as well as how to share the roles of knowledge generators and decision-makers with the students in their classes.

Each of these networks operates with a slightly different model of professional development. The Internationals Network for Public Schools offers mentoring and leadership development for the principals of affiliated schools and also runs a seminar for new teachers over the summer. Internationals also provides a summer institute, monthly observation opportunities, and ongoing professional development opportunities for teachers. Expeditionary Learning provides on-site coaches and a large national conference every year, while the High Tech network works with experts in academics and education to help schools complete complex tasks, such as mapping their project-based learning approach to Common Core standards. In addition to professional development sponsored by the networks, all five of these deeper learning schools devote time for teachers to identify and engage in meeting their own professional development needs through collaborating with their grade-level or discipline-specific peers. At HTHMA, for example, teachers determined that they wanted to create small study groups of teachers to address student writing across all classes and to improve instruction for English language learners.
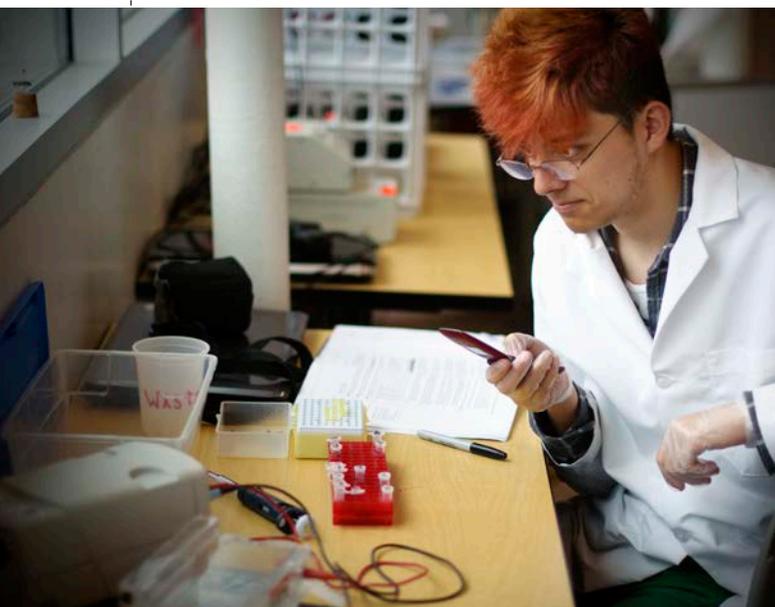
Using Technology and Digital Media to Support Deeper Learning

In today's interconnected, fast-paced world, technology is pervasive in daily life, and American classrooms are no exception. According to the National Center for Education Statistics, 97 percent of all teachers in the U.S. had computers in their classroom in 2009, and 93 percent of those computers had internet access.[37] Just having a computer, though, does not mean that teachers and students are using it (or other forms of technology) to improve instruction and learning. When asked specific questions about technology in their classroom, teachers reported that students used technology to:

→ Conduct research (66 percent)
→ Create graphic or visual displays (53 percent)
→ Solve problems (45 percent)
→ Develop multimedia presentations (42 percent)
→ Correspond with others (31 percent)
→ Conduct experiments or create art, music, movies, or webcasts (25 percent)
→ Develop demonstrations or simulations (17 percent)
→ Design and produce products (13 percent)[38]

At the deeper learning schools profiled in this report, both students and teachers are using technology in all these ways, and to a much greater degree. In addition to the ubiquitous use of PowerPoint to create multimedia presentations and portfolios, we found the following specific examples:

→ **Students are using technology to build critical-thinking skills:** With technology, students are engaging in independent, internet-based research and learning how to evaluate the reliability of the sources they find on the Internet. In the pre-Internet world, students' research would be confined to books and journals published at the local library and the authority of the source would be self-evident. Now students can access information from anywhere, but, at the same time they need

to develop the additional critical-thinking skills required to understand what is usable and what is not.

→ **Technology is used to increase efficiencies, freeing students and teachers to engage in higher-level thinking:** At Codman Academy, students in Ed Yoo's physics class use laptops and a computer simulation to build circuits as part of a unit on electricity. As Yoo explains: "If we were to do this mechanically, I would be spending most of my time dealing with defective and lost parts and students would be focused on that. Now that is taken care of and students are focusing on more complex questions."

→ **Technology is used to foster students' project management skills, helping them to become self-initiated learners:** Students at Avalon use a program called "Project Foundry" to map out their projects. Every facet of any project—from linking the various components of the project to state standards, scheduling task completion dates, communicating with teachers and other students, tracking progress, and logging the amount of time spent working on the project—is kept track of in Project Foundry.

→ **Technology is used to enable students to understand the progression of their learning over time:** At HTHMA and New Tech High, students create online digital portfolios that showcase the progression of their work through their course of study. As a graduation requirement, seniors at New Tech High assemble a portfolio of projects that shows the development and mastery of 21st-century skills and academic skills. The HTHMA faculty is in the process of revising the structure of digital portfolios to increase their impact on students. These educators believe that for students to understand how they have developed and grown as learners over time will help create intrinsic motivation for them to continue to be engaged in and initiate their own learning.

→ **Technology is used to increase efficiencies and streamline communication among students, teachers, and parents:** Many of the schools profiled in *Time for Deeper Learning* provide class web pages, where they post syllabi, homework, and other information so that students have easy access anytime, anywhere, to assignments. Students at New Tech use "Echo," an online learning management system developed for the New Tech Network, to support project-based learning and facilitate communication and collaboration. Every day, students and teachers at New Tech use Echo to access course materials, project plans, and assignments, and to communicate with one another through email and online groups. For example, students in a senior seminar class, which consists of roughly 40 students, access their assignments through Echo, saving valuable instructional time by eliminating the need to pass out papers.

→ **Technology is used to increase efficiencies and improve quality of feedback on student work:** At ICHS, Tim Blackburn, the global studies teacher, edits students' papers using Word and Google docs, as students email drafts back and forth. In many of the schools, essays and tests are completed online, saving assessment time for teachers and building students' technological skills.

→ **Technology is used to build students' sense of responsibility and accountability to the school community:** Codman uses the Citizenship system, a computer-based tool that tracks student behavior. The system, designed by George Brackett and faculty, rewards positive decision-making while holding students accountable when expectations are not met. Using laptops, teachers and staff award positive points (kudos) and negative points (deltas) to students throughout the day. Kudos are awarded for such actions as engagement/participation, leadership, perseverance/effort, positive attitude, scholarship, service, and tutoring. Students earn various commendations and rewards when they reach certain point levels. According to the school, "The spirit of the system is to follow the norms of our community, and to move from external feedback (points, consequences) to internal feedback and self-control as students mature over the course of their education."[39]

→ **Technology is used to foster students' creativity, engagement, and connections to the broader world:** At HTHMA, all students are required to take Media Arts, where they learn how to use state-of-the-art digital tools as they complete visual and multimedia components of interdisciplinary projects. For example, in a tenth-grade geometry project, students used digital tools to create geometric art pieces and organize an exhibition of their work at a local museum.

→ **Technology is used to individualize instruction:** At Codman Academy, students in a tenth-grade math class use Khan Academy, an online learning system, to access video tutorials, complete practice problems associated with the day's lesson, and review previously taught concepts. The approach enables students to work at their own pace while still learning the same content, and it also allows teachers to spend more time helping individual students.

CONCLUSION

Challenges and Promising Trends in Policy and Practice

Rethinking and redesigning how to deploy a school's resources—time, teachers, and community partners—to meet the ambitious goal of graduating students who are critical thinkers, self-directed learners, and team-players prepared to succeed in the world beyond the school's walls, requires considerable innovation and creativity. The five schools profiled in *Time for Deeper Learning* are trendsetters and leaders, and much is to be learned from the challenges they are facing. Educators at these five schools identify the following key challenges, as they organize their time to focus on student acquisition of deeper learning skills:

Key Challenges

ENSURING STUDENTS DEVELOP ACADEMIC PROFICIENCY AND DEEPER LEARNING SKILLS

Codman Academy Principal Thabiti Brown asks, "What is the balance between spending time helping kids develop skills which they are supposed to have before they get here...and working on the skills we want them to have when they leave?" As one answer to Brown's question, the National Research Council's *Education for Life and Work* report states: "Teaching and learning of problem-solving and metacognitive competencies need not wait until all of the related component competencies have achieved fluency."[40] And the stated principles and philosophies of many of the deeper learning networks are in agreement. Indeed, they postulate that there is no reason to separate basic skills acquisition from the pursuit of more complex, higher-order thinking embodied by the deeper learning skills. But in reality, there is often simply not enough time for both, particularly in schools with large numbers of low-income students who have weak educational backgrounds.

Educators at the five schools featured in this National Center on Time & Learning (NCTL) report try to integrate skills support into their project-based

pedagogy, as they also maintain time in their schedules for more traditional academic instruction that is geared toward content measured by state standardized tests. However, truly integrating the two approaches to teaching and learning remains an ongoing challenge at each of these schools.

The tension between focusing on deeper learning skills and basic skills is particularly strong in mathematics. Nearly all the featured schools are teaching separate, skill-based math classes during the course of the school day and often rely on more conventional instructional approaches for these classes, even though their student projects may include more advanced mathematics concepts. At ICHS, for example, the "Regents review" classes are taught in a more traditional, teacher-led approach. At Codman Academy, the math curriculum is in transition. As Principal Thabiti Brown explains:

> We are not doing long-term math expeditions this year like we have in the past, because we did not get high enough levels of student achievement with that model. We have been working on this for 10 years, and the students are going very deep and can write and talk about what they do learn, but we are not getting to half or more of the standards. So our approach is not translating to success on the traditional methods of assessment that the students need to excel on—assessments that go beyond the MCAS [the Massachusetts standardized test], like the SAT, or the Accuplacer [an assessment students take for college placement], or a college-level math class.

For Codman, whose majority low-income student body boasts high-proficiency rates in math and English language arts (ELA), a significantly longer school day and year is an essential component of the solution to the problem of addressing both basic skill and knowledge gaps and promoting deeper learning competencies. Indeed, Codman's leaders say the school's expanded academic calendar, with a longer school day and year, is fundamental to their students' success in mastering academic content, as measured by standardized tests, and to the acquisition of deeper learning skills as well.

DIFFERENTIATING INSTRUCTION WITHIN A PROJECT-BASED APPROACH TO TEACHING

Teachers at the five deeper learning schools in this report speak about the difficulty of effectively differentiating their curricula for students of varying skill

and mastery levels. The challenge of differentiation, though an issue for all schools, can be particularly difficult in the context of project-based and self-directed learning environments precisely because students have different levels of background knowledge and basic skills needed to tackle such endeavors. The educators at these schools suggest several strategies for approaching this challenge:

A teacher from High Tech High Media Arts (HTHMA) notes that emerging technology offers struggling readers many new ways to access texts, so that they can grasp concepts and participate in class discussions even as they work on improving their reading levels. "You can listen to the book on your iPhone or Kindle. You can get help from coaches and peers and do research online."

Another HTHMA teacher relays that when beginning a unit, he will offer five different supporting documents and lay them on the table in the order of their complexity. "I will say, 'Everyone pick two documents to read and incorporate in your work. Honors students must pick three from the left side of the table.'" An International Community High School (ICHS) science teacher offers much the same solution—identifying primary research documents at different reading and complexity levels so all students can understand the material.

One HTHMA mathematics teacher frequently uses the school's longer instruction block to deliver a mini-lecture on a particular concept about which a handful of students need help. Then, when other students ask for help on the same concept, the teacher directs them to their peers for an explanation.

An ICHS global studies teacher sets up his classroom with different "stations" that layer the curriculum and move students from the concrete to the abstract. As students circulate through the stations, they need greater depth of knowledge and the ability to synthesize and draw conclusions to succeed. Students move at their own pace through the stations and not all students reach every station. For example, early stations in the unit on the Islamic Empire provide basic background through readings and single-level questions, while later stations pose more complex questions about the effects of various societal forces on the empire's history. Rubrics used at the end of the semester to grade portfolio presentations include assessments of the complexity of the students' thought. (It should be noted that such differentiation necessarily extends to the acquisition of English language, given that students enter these schools with varying levels of fluency. As the global studies teacher explains, "Sixty percent of our students may be working on simple predicate/subject sentences, but others are doing adverb wheels, and a few may be completing more complex language tasks in the context of their projects.")

FINDING TIME TO ADDRESS EXTERNAL BARRIERS TO STUDENT ACHIEVEMENT

Educators at every school researchers visited for this NCTL study mention their struggle to adequately respond to non-academic barriers to achievement that affect student performance—such as social-emotional problems, unstable home lives and family relationships, and problems associated with growing up in poverty. One school in particular, ICHS, which has a student body that is largely immigrant (90 percent English-language-learner population) and largely high-poverty (79 percent of the students receive free or reduced-price lunch), is especially focused on addressing these barriers.

ICHS Principal Berena Cabarcas points out that, in addition to the overall stress affecting immigrants, many of her students face a particular challenge—reunifying as an adolescent with a parent who did not raise them. According to Cabarcas, reunification brings to the surface cultural, social, and family issues that often result in a higher incidence of academic and social development problems for the adolescent. With Title I funding paying for staff time, ICHS engages in home visiting and intensive family outreach to make connections with families. ICHS also presents a half-day event once a month that is focused on subjects of interest to immigrant families. The events, with programs presented in English, Spanish, and French, are also funded through Title I and planned and implemented by the principal together with the PTA and a teachers' group. During a recent PTA meeting, Cabarcas arranged an upcoming Saturday program, featuring a workshop on economics and financial planning to be presented by one of the teachers. While parents attended the workshops, students received academic tutoring, centered on preparing for the New York State Regents exams and compiling their portfolio presentations.

IMPROVING THE EFFECTIVENESS OF ADULT COLLABORATIVE TIME AND TEACHER PRACTICE

The schools profiled in this report are all working to strengthen the effectiveness of teacher time in improving instructional practices and, ultimately, generating stronger academic outcomes for students. The capacity of teachers and the need to create and invest time in new professional learning opportunities was also cited as a major challenge in *Education for Life and Work*:

New approaches to teacher preparation and professional development will be needed to help current and prospective teachers understand the instructional principles for the teaching and assessment of 21st century competencies, and the role of these competencies in the learning of core academic content. If teachers are not only to understand these ideas but also to translate them into their

daily instructional practice, they will need support from school and district administrators, including time for learning, shared lesson planning and review, and reflection.[41]

Robert Kuhl, Director of HTHMA, addresses a related question concerning the allocation of time that faces educators at each of these five deeper learning schools:

> How do we improve the use of collaborative adult time? We often have very well facilitated and aligned professional development, but sometimes it is poorly facilitated and not useful. We are working on better using the adult collegial time. Just as with students, teachers all have different needs to develop as learners. Newer teachers might be working on consistently keeping the students engaged and the classroom managed, while veteran teachers are focused on moving the students to professional-level work and collaboration and having the students manage that whole process. We need to meet all those needs at once.

Each of these educational challenges highlights the intense focus these schools place on how they are allocating learning time and the difficult choices and trade-offs they must make in pursuit of their goals. To address each of the five priorities identified in this report—building a positive learning environment; using an interdisciplinary, project-based approach; engaging in "authentic" assessments; connecting students to the "real world"; and encouraging teachers to work collaboratively—schools invariably confront onerous time constraints. While many deeper learning schools have not expanded the total time students are in school relative to the conventional district school calendar, some have, in fact, increased learning time. And educators at these schools are finding that, for both students and teachers, the expanded schedule can become a key solution to meeting many of the challenges detailed here.

Promising Trends in Policy and Practice

The need to rethink, repurpose, and potentially expand learning time to achieve the goals of deeper learning will be a particularly relevant concern to policymakers and education leaders thinking about how to bring some of the most successful practices of these deeper learning schools to more conventional district schools, especially those schools serving significant numbers of high-poverty students. The schools profiled in *Time for Deeper Learning: Lessons from Five Schools*, even those that do not significantly expand learning time for their students, benefit from substantial autonomy regarding curricula, testing,

Educators are finding that increased learning time can become a solution to meeting many of their challenges.

scheduling, and budgeting—autonomy that allows the educators at these schools to make important choices regarding how they invest their time. The tradeoffs these educators make may not be feasible for all schools, and having additional time may therefore become even more essential to widespread implementation of the deeper learning approach.

In fact, for the focus on deeper learning to take root across thousands of schools and districts across the country, several education policy drivers—in areas such as accountability and assessments, graduation requirements, teacher preparation and professional development, and the use of instructional time—will have to shift. There is growing evidence that such a shift may already be in progress, based on the following noteworthy recent developments:

→ **COMMON CORE AND NEXT GENERATION SCIENCE STANDARDS:** As districts in most states adopt curricula mapped to the Common Core and the Next Generation Science Standards (NGSS) in the coming years, the process may provide an opportunity for schools to re-examine how they allocate time overall and how they can better design their schedules to support student acquisition of deeper learning skills. The new standards prioritize more complex engagement with fewer content areas, rather than lower-level mastery of a broad set of facts. *Education for Life and Work*, the 2012 National Research Council report, points out that if and how new Common Core and science assessments focus on deeper learning skills will largely drive how much time and attention will be directed to teaching these skills in schools and districts throughout the country.[42] Developing scalable summative assessments that measure these skills also will be a key issue for deeper learning proponents.

→ **PERSONALIZED LEARNING:** The first Race to the Top—District competition, in 2012, emphasized personalized learning as a platform to "allow students to: understand their individual learning goals and needs; access deep learning experiences that include individual and group tasks; and develop such skills and traits as goal setting, teamwork, perseverance, critical thinking, communications, creativity, and problem solving across multiple academic domains."[43] The group of skills highlighted in Race to the

Top—District is very consistent with the skills emphasized in deeper learning schools.

→ **COMPETENCY-BASED EDUCATION:** Adherents of competency-based education are moving from a time-based system to a learning-based system by credentialing students upon demonstration of the knowledge and/or skills required to meet established learning objectives, rather than upon 'seat time.' According to *Making Mastery Work,* a recent analysis of 11 high schools implementing competency-based education, the distinguishing characteristics of this approach are: 1) a clear, measurable definition of mastery, along with procedures and tools for tracking that mastery and 2) the flexible use of time.[44] Now taking root in several states, including New Hampshire, Maine, Ohio, and Oregon, and in a growing number of districts and schools, competency-based education allows students to progress once they have mastered subject matter. This approach also emphasizes the importance of formative assessments to track student progress toward mastery in differentiated learning environments, and it enables students to build their own sense of self-efficacy and cognitive confidence over time. Many deeper learning schools strongly emphasize and make a commitment to these goals as well.

→ **OPEN BADGES:** The Open Badge Project and the Digital Media + Learning Competitions are creating competitions that recognize learners for the development of deeper learning skills—such as critical thinking, communication and/or collaboration, across learning contexts—and reward them with digital badges. Sponsored by the Bill and Melinda Gates Foundation, the John D. and Catherine T. MacArthur Foundation, the Mozilla Foundation, and the Humanities, Arts, Science, and Technology Advanced Collaboratory, these competitions are helping to identify and inspire innovative approaches to learning.

→ **EXPANDED LEARNING TIME:** According to *Mapping the Field: A Report on Expanded-Time Schools in America,* an NCTL study published in December 2012, there has been a significant increase over the last three years in the number of public schools that have expanded learning time. The report identifies 1,002 expanded-time schools across the United States--up from 655 schools identified the last time NCTL issued the report in 2009--which represents an increase of 53 percent. The number of students being served by expanded-time schools has increased to 520,000 students, up from 300,000 in 2009. Most of the rapid growth has occurred among traditional district schools in recent years, whereas just a few years ago charter schools were driving the growth. Consequently, district schools now account for 40 percent of all expanded-time schools, up from 20 percent of the 2009 total. With a longer school day and/or year, many of these schools have raised student achievement, begun to offer a broader educational experience, and empowered teachers through the enhancement of collaboration and professional learning opportunities. A key benefit of an expanded school schedule is the particular opportunity it provides educators to plan for and incorporate projects and curricula focused on building deeper learning skills into school schedules.[45]

Each of these promising educational endeavors is aligned with, and could support, greater emphasis and focus on deeper learning skills in schools across the country.

In Conclusion

With the advent of the Common Core and the Next Generation Science Standards, along with the new federal flexibility made available through the Elementary and Secondary Education Act waiver authority, the next few years will mark a major turning point in education reform. The education sector as a whole is poised to implement policies that aim to give students more opportunities to become strong communicators, collaborators, critical thinkers, problem solvers, and motivated learners, while they continue to master core academic skills.

As the five schools profiled in *Time for Deeper Learning* demonstrate, to be successful in reaching these broad goals, educators will need to rethink how time is used for learning in school and in community settings, and they also will need to reconsider how teachers use time to build new skills and taking on new responsibilities. Education leaders who are committed to deeper learning will additionally need to consider whether the conventional school schedule offers sufficient time to support all students in acquiring the full range of deeper learning skills. With more than 20,000 schools across the country serving high numbers (75 percent or more) of students in poverty—and where many of these children are significantly behind academic grade level—it indeed seems unrealistic that deeper learning approaches can be implemented, along with targeted interventions to raise proficiency levels in the core subjects, without the expansion of learning time.

We hope that this report, produced by the National Center on Time & Learning with support from the William and Flora Hewlett Foundation, offers early insights, raises pertinent questions, and provokes further research and conversation about how to encourage more schools to set aside sufficient time—and to use that time well—so that students everywhere have ample opportunities to become deeper learners.

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Bringing the successful practices of deeper learning exemplars to schools serving significant numbers of high-poverty students will require practitioners to rethink, repurpose, and expand learning time.

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