



DEEPER LEARNING NETWORKS SERIES

New Tech Network

Driving Systems Change and Equity
Through Project-Based Learning

Julie Adams and DeAnna Duncan Grand

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Executive Summary

The current incentive structure in our k–12 education system tends to encourage instruction that covers a broad list of basic facts and skills across subject areas while sacrificing the depth of learning needed to cultivate the competencies all students must now have to thrive in college, in their careers, and in life. Research tells us what fosters meaningful learning: approaches that engage students in meaningful, culturally relevant tasks, tap into their curiosities, use inquiry as a primary learning strategy, and provide ample opportunities for collaboration and feedback to foster growth at each student’s own pace.

Research from the science of learning and development also suggests that, at a foundational level, education requires the development of affirming relationships to catalyze learning; positive relationships with adults and peers encourage students to engage their curiosities and take learning risks. Despite what this research shows, far too few students—especially students of color, English learners, students living in poverty, and students with disabilities—attend a school utilizing a pedagogical approach that supports meaningful learning.

Historically, deep learning opportunities have occurred in schools attended by our country’s most advantaged students, and there have been few successful efforts to systemically create the structures and policies necessary to ensure every student has access to this type of learning. The New Tech Network, a network of more than 200 elementary, middle, and high schools across 25 states, breaks from this norm. It focuses on systemic change and has instantiated deeper learning practices in many geographically, politically, and socioeconomically diverse school settings. This case study describes how New Tech Network has spread its practices to many traditionally structured, public school districts across the United States.

This report suggests that the following practices allow the effective transfer of the network’s school model and pedagogies:

1. New Tech Network helps partner schools incorporate its core values for student learning into their structures and practices to ensure a shared vision of deeper learning.

New Tech Network’s vision for student learning is embedded in its schools through the New Tech Network design pillars—teaching that engages, culture that empowers, technology that enables, and outcomes that matter. As a way to enact these design pillars, all New Tech Network schools use project-based learning, a pedagogical approach that engages students in learning through multifaceted projects. Each school also seeks to develop a school culture and a set of structures that foster strong pupil-teacher relationships, such as advisory programs and joint teacher planning time.

Every school that partners with New Tech Network looks slightly different, as the network helps each school adapt the model to fit its unique needs and incorporate its core values into the mission and vision of the school. Educators at New Tech Network–affiliated schools then seek to continuously improve the school’s practices, so that all design pillars are in place and students are developing New Tech Network’s deeper learning–aligned outcomes that matter (skills associated with knowledge and thinking, agency, collaboration, oral communication, and written communication), even as district or state policies change and new challenges arise.

Implications for schools and districts: School and district leaders seeking to spread deeper learning can consider how their school structures and practices will need to change as they adopt a vision and a set of values that support and enable deeper learning environments.

2. When a school joins the network, New Tech Network uses a systematic planning and design process that seeks to involve all key stakeholders in the development and implementation of its deeper learning model.

New Tech Network does not operate schools. Instead, as a nonprofit organization, it partners with schools and districts to either redesign an existing school or open a new school. To create a plan for how to redesign or open a school, New Tech Network and a prospective school team engage in activities focused on mutual understanding. New Tech Network listens to the needs of both the school and its district and seeks to engage as many stakeholders as possible in these early conversations, including teachers, school and district leaders, school board members, teachers union representatives, parents, and any other influential community members. By understanding the unique, local context of each school, New Tech Network can better identify what supports that school will need.

During this time, a prospective school team is also working to fully understand the New Tech Network model by touring New Tech Network schools, attending network-wide gatherings, and communicating directly with network staff. If New Tech Network and the prospective school team decide to move forward with a partnership, they begin a series of professional development activities and events focused on visioning and capacity building at the school and district levels. These activities and events are tailored to the individual needs of the school and its district. From start to finish, a new or transforming school will work on planning and development with New Tech Network staff for 9 to 18 months before the school is ready to implement the model.

Implications for schools and districts: Schools and districts implementing new deeper learning initiatives should make time to deeply understand the model, engage in professional development, and work with stakeholders *before* they launch the initiative.

3. New Tech Network facilitates professional learning for adults that is experiential and project-based, mirroring the student learning in New Tech Network schools.

As affiliated schools implement the New Tech Network model, New Tech Network staff work to build the capacity of their educators through experiential, professional, project-based learning. These educators then create learning environments for students that mirror the learning environments they themselves have experienced with New Tech Network. New Tech Network coaches, many of whom are former educators at New Tech Network schools, facilitate professional development events, including multiday residencies at New Tech Network schools for teachers, school administrators, and district leaders. During these professional development events, schools and districts also work with network coaches to develop the structures and processes necessary for the schools and districts to successfully adopt project-based learning while using the same structures and processes students use throughout a project unit. The experiential and project-based professional learning opportunities allow New

Tech Network educators at any experience level to understand deeply the technical dimensions of New Tech Network's learning model while also shifting their mindsets about what is possible in classrooms.

Implications for schools and districts: School and district leaders seeking to create sustainable change should engage educators in professional learning experiences that mirror the intended instructional shifts, thus enabling them to be deeply understood.

4. New Tech Network provides ongoing supports for educators and school leaders through coaching and professional learning that reinforce the key tenets of New Tech Network and build local capacity.

Direct support from New Tech Network is crucial for a partner school during the first few years of implementation. As schools experience challenges, dedicated New Tech Network coaches act as resources for project-based learning knowledge and help schools identify their needs, including barriers to having the four design pillars in place. The specific supports provided by the New Tech Network coach depend on the individual school and its needs but may include anything from helping to develop school-based professional development plans to helping to develop rigorous hiring practices for new teachers. These individualized, direct supports gradually phase out as a school increases its capacity to identify and address its own needs.

In addition to the direct support from a dedicated New Tech Network coach, all schools have ongoing access to professional development opportunities and other network resources. These ongoing professional development opportunities include virtual workshops and certification programs. Other network resources include access to Echo, New Tech Network's learning management system, which also connects teachers to a repository of projects and materials to which other teachers in the network have contributed. The array of learning supports provided by New Tech Network allows educators and school leaders to address the many challenges that emerge when implementing New Tech Network's deeper learning approach, helping to improve the quality of the school environments.

Implications for schools and districts: Schools implementing deeper learning through project-based learning benefit from both high-quality curriculum materials and coaching. Education leaders can consider employing these methods to help make shifts in instructional practice sustainable.

5. New Tech Network continuously improves its practices to better meet the needs of educators and school systems in geographically, economically, politically diverse settings.

The network has experienced both challenges and successes during its expansion into different districts and states in the past two decades. These experiences have given it a better understanding of the political and logistical needs of schools in different communities. Understanding these needs has in turn paved the way for the network's differentiated support strategy that it uses today.

Adjustments and improvements are ongoing. New Tech Network continues to adapt its processes and supports to the needs of its affiliated schools, including the development of supports for districts that hope to spread deeper learning–aligned, project-based practices to more schools. Overall, New Tech Network’s engagement in continuous improvement has allowed it to model for schools and districts what continuous learning looks like at a systems level. It has also helped the network adapt to challenges and opportunities in local settings while refining and improving its supports for partners who seek to create project-based learning school models.

Implications for schools and districts: Schools and districts interested in transforming their systems to better support equity-oriented deeper learning practices will need to adapt their strategies to different contexts and create systems for continuous improvement.

Findings in this study illustrate the need to build and maintain school structures and practices that align with strong, equity-oriented deeper learning visions, professional supports that mirror intended instructional shifts, and systems that enable continuous improvement and collaboration. Schools and districts looking to transform their instructional practices to serve all students in more personalized and productive ways can consider the approaches described in this study to understand the many layers that must be addressed to facilitate sustainable, deeper learning–oriented systems change.

Introduction

Everyday Mechanics

The Everyday Mechanics classroom is abuzz on this Friday morning as students are hard at work on their projects: Some are sitting in the purple classroom chairs, working with two or three other students or working alone, and others are up at the whiteboard working together to draw their project blueprints. This is the 7th week their groups have been working to design homemade devices to help individuals with physical disabilities, drawing on the pre-calculus and physics content they have been learning in this interdisciplinary course. Students have now met and interviewed family members and others in their community who will be using their finished projects, so the pressure is on to create something that works.

Mr. Burgess and Mr. Schuette, the co-teachers of this course at Carolina High School and Academy in Greenville, SC, float around the room talking to students about their project plans, challenging them with questions, and taking moments to connect with each other about how to meet the needs of a wide range of learners. The agenda, in New Tech Network's learning management system, Echo, is projected on the classroom's SmartBoard and remains there for the entirety of the class period to remind students of the plan for the day, next steps, what is due, and their project's driving question (what students seek to answer over the course of their project).

A few weeks back, students walked into their classroom to find a letter addressed to the "Innovative Thinkers of Everyday Mechanics" on their desks, known as an entry document, designed to get students interested and curious about the project to come. Mr. Burgess, a first-year teacher, takes credit for naming the project "Work Work Work Work Work—Rihanna." A clever pop culture reference that received amused eye rolls from students, as it also names a physics concept they will be exploring in their project. The project's driving question is "How can homemade devices be used to help individuals with physical disabilities?" Mr. Burgess' sister, who recently became paralyzed and was his inspiration for the project, also joined the class to help introduce the project and share her experience.

In the weeks since the introduction to the project, students have completed physics and precalculus exercises, listened to guest speakers, participated in workshops designed by the teachers, and carried out multiple informal and formal presentations to their class on their project plans and research.

Today, students are listing and gathering the materials they will need to build their homemade devices and are beginning to construct their machines or rework their blueprints as needed based on their growing knowledge of physics. Materials are scattered throughout the classroom. Each group has a large piece of plywood leaning against their desks or tucked away along the shelves, a project supply provided through a community donation. A student getting ready to start construction asks Mr. Schuette some logistical questions about using the materials at hand, including how to drill something into the plywood since they cannot bring power tools to school. He explains that the class will have access to the woodshop if needed.

As the class continues working, one team of three girls, with their cell phones in hand and laptops in front of them, calls Mr. Burgess over to ask a question. The team wants to design a device to help their teammate's aunt, a burn victim who is unable to use her hands. The team developed

questions to ask the girl's aunt to assess her needs as an individual with a disability, after various, practical interview workshops in class, designed by the teachers. The team landed on wanting to develop a device to help the girl's aunt open soda cans. When Mr. Burgess comes over to help the group with their question, he challenges them with a question in return: "If she can't open the soda can, how can she put that thing under that?" as he points to their blueprint. "That's something you need to figure out. I have an idea, but I'm not telling you," he says, encouraging them to think critically about their plan. A few minutes later he stops by again to discuss a specific physics concept they have a question about.

As Mr. Burgess and Mr. Schuette describe later in an interview, they work together as a team to develop projects like this one and support each other in the classroom. As a first-year teacher, Mr. Burgess explained that he had no formal training in project-based learning and was open to, but unfamiliar with, New Tech Network and its model. Mr. Schuette, a teacher with over 9 years of experience, 3 years of which have been in project-based learning at this school, was able to support Mr. Burgess and orient him to the many processes as they began working to collaboratively plan projects. As Mr. Burgess explains, "In terms of working together, we got lucky that his strengths reflect my weaknesses."

They think their differences allow them to think more creatively about curriculum issues and give students more opportunities to build relationships with one or the other of them. Their partnership also allows them to problem-solve the many issues that arise in a course like this serving a heterogeneous group of students, such as how to group students for projects in a way that challenges them at their level and fosters collaboration and how to integrate learning about mathematics and physics content with project-based learning.

The current incentive structure in our k–12 education system tends to encourage instruction that covers a broad list of basic facts and skills across subject areas while sacrificing the depth of learning needed to cultivate the competencies all students must now have to thrive in college, in their careers, and in life.¹ This structure runs counter to what research tells us about the practices and systems that foster meaningful learning. These include practices and learning environments akin to what is described in the Everyday Mechanics class above: approaches that engage students in meaningful, culturally relevant tasks, tap into their curiosities, use inquiry as a primary learning strategy, and provide ample opportunities for collaboration and feedback to foster growth at each student's own pace.² Despite what this research shows, far too few students—especially students of color, English learners, students living in poverty, and students with disabilities—attend a school utilizing a pedagogical approach that supports their deep learning.³

Many education reformers throughout history have attempted to create education systems where meaningful learning is the norm rather than the exception, including John Dewey, with his progressive schools at the turn of the 20th century, and Theodore Sizer, with his Coalition of Essential Schools in the 1980s and 1990s.⁴ Yet there have been few successful efforts to systemically create the structures and policies necessary to ensure all students have access to the type of meaningful learning that science tells us is best.⁵ Furthermore, when schools have been able to achieve these types of learning environments, they have historically been reserved for our most advantaged students.⁶

While a pattern of educational inequity and reversion to industrial-era pedagogies holds for many of our nation's schools, New Tech Network, a network of more than 200 elementary, middle, and high schools across 25 states, stands among the growing number of efforts that have broken from this pattern. New Tech Network focuses on systemic change and has instantiated equity-oriented, deep learning practices in many geographically, politically, and socioeconomically diverse school settings.⁷ The network works to help schools develop and continuously improve to meet the unique needs of their communities and focuses on building capacity at the school and system levels so that schools can sustain, and even spread, practices that enable meaningful learning environments, over time.⁸

New Tech Network approaches systems change first by partnering with schools and districts to design learning environments where every student can experience deep, meaningful learning. Every New Tech Network school is unique, but each seeks to implement policies and practices to actualize New Tech Network's four design pillars—teaching that engages, culture that empowers, technology that enables, and outcomes that matter. This approach includes each school using project-based learning (PBL), or what others have referred to as inquiry-based learning or learning by doing, where the strategy for educating students is centered on multifaceted projects.⁹ This approach also includes all New Tech Network-affiliated schools assessing students on rubrics using the New Tech Learning Outcomes, a list of skills and competencies meant to outline what all students will need for college, their careers, and life.

Moreover, each New Tech Network school grounds its instructional approach in *deeper learning*—teaching and learning practices that enable students to learn core academic content and apply their knowledge in relevant ways. Deeper learning approaches, including PBL, allow students to explore their interests and learn academic content in personalized and inquiry-based ways.¹⁰ They help students think critically and solve complex problems using mathematical, scientific, and creative reasoning. To this end, teachers engage students in learning experiences that require collaboration, effective communication, and self-directed inquiry. These experiences enable students to “learn how to learn” and develop academic mindsets that increase perseverance and productive learning behaviors.¹¹ In creating opportunities for deeper learning to flourish, each New Tech Network school also seeks to create safe, positive, and inclusive learning environments—environments that research has demonstrated are crucial to student learning and development.¹²

Transforming education systems, so classrooms look and feel more like what is described above, is no easy task. This case study seeks to illuminate the specific structures and processes that New Tech Network uses to re-create, sustain, and spread equity-oriented deeper learning practices in schools in different locations across the United States.

We begin this report with a description of the network's origins and an overview of the New Tech Network model, highlighting the key aspects of the network's vision that each New Tech Network school adopts and builds on. We then identify the key structures and practices that New Tech Network uses when partnering with schools to design learning environments and build the capacity of educators. Lastly, we illustrate how the network approaches ongoing support to its affiliated schools and districts and how it approaches the idea of scale (i.e., partnering with more schools and expanding the network).

Through interviews with New Tech Network personnel and observations at both New Tech Network–affiliated schools and professional development events (see Appendix A for full description of this study’s methodology), our report suggests that among the practices that allow effective transfer of the network’s school model and pedagogies are the following:

- 1. New Tech Network helps partner schools incorporate its core values for student learning into their structures and practices to ensure a shared vision of deeper learning.** This includes New Tech Network’s deeper learning–aligned outcomes that matter.
- 2. New Tech Network uses a systematic planning and design process that seeks to involve all key stakeholders in the development and implementation of its deeper learning model.** The network does not prescribe a single solution to “fix” a school and, instead, builds the capacity of educators and administrators at the school and district levels to identify and address needs.
- 3. New Tech Network facilitates professional learning for adults that is experiential and project-based, mirroring the student learning in New Tech Network schools.** These opportunities focus on building the capacity of educators at New Tech Network schools so they can implement PBL, collaborate and communicate effectively, and meet the needs of all students.
- 4. New Tech Network provides ongoing supports for educators and school leaders through coaching and professional learning that reinforce the key tenets of New Tech Network and build local capacity.** This includes working closely with districts to develop district visions aligned with deeper learning and, in some cases, partnering to design and transform additional schools.
- 5. New Tech Network continuously improves its practices to better meet the needs of educators and school systems in geographically, economically, and politically diverse settings.** In addition to modeling what continuous learning looks like, the network can adjust and improve to better support its educators and affiliated schools.

New Tech Network represents an exemplar case, revealing how one organization has re-created a deeper learning and equity-oriented approach in high-quality and context-sensitive ways. In highlighting New Tech Network’s structures and practices, this study provides insights into the promising systems that key decision-makers can use to enable deeper learning models to take hold.

Origins, Growth, and Commitment to Core Values

New Tech Network is one of the largest networks of public schools in the United States, but re-creating its model in schools and districts across the country was not its original intention. Just as New Tech Network schools today are developed with the unique needs of each community in mind, its flagship school, New Technology High School (NTHS), was developed in response to the needs of the community in Napa, CA. After district and community stakeholders collaboratively designed and opened this first school, a foundation, and later a network, was formed to open many more schools. This section describes how New Tech Network has developed over two decades, how its success in this time has led to its spread, and how its school design process and core values are both rooted in its history and adapted to meet the needs of each school it works with.

New Tech Becomes a Network

The idea for NTHS originated with a group of local entrepreneurs who observed that the region's high school students were not graduating with the skills necessary for employment at their companies.¹³ These entrepreneurs set out to codevelop a school with educators where students could learn to collaborate, innovate, and communicate to solve complex problems and develop the skills they deemed necessary for a contemporary workplace. With a clear vision of a school that used PBL and had one-to-one technology access, these entrepreneurs, in partnership with Napa Valley Unified School District, secured the financial resources necessary to develop their new school.¹⁴ NTHS opened as a district-run public school in 1996, and the establishment of the New Technology Foundation followed in 1999, under the leadership of Bob Pearlman and Susan Schilling.¹⁵

In the years following, NTHS saw positive results and received recognition from many others in the education field. For example, student test scores for the 1998–99 school year were higher than the average scores of other students in California on both the SAT and the Stanford Achievement Test 9 (SAT 9).¹⁶ NTHS also received recognition beyond Napa, as the United States Department of Education named it as a demonstration site for integrating multimedia into academic programs.¹⁷ The state of California also named the school as a demonstration site for integrating technology into the classroom and named it a model business career pathway and a model digital high school.¹⁸ Building on this success, the New Technology Foundation opened additional schools in northern California, including Sacramento New Technology High School in 2001, reaching more students in the state.

Visitors from around the state and country came to observe New Technology Foundation schools and take ideas for school improvement back to their communities. Alan Veach, now a Director of District and School Development at New Tech Network, recalled that when he was a principal, the Governor of Indiana, Mitch Daniels, visited a New Tech Network school and concluded that “all schools should look like New Tech.”¹⁹ This led to several organizations in Indiana providing seed funding for the development of New Tech schools in their state.

As New Technology Foundation grew to open additional schools in more states across the country, it learned what conditions better enable deeper learning and the New Tech model to take hold, such as school districts incorporating New Tech Network's core values into their overall strategies (something current New Tech Network leaders describe as easier to do in school districts with fewer than 25,000 students).

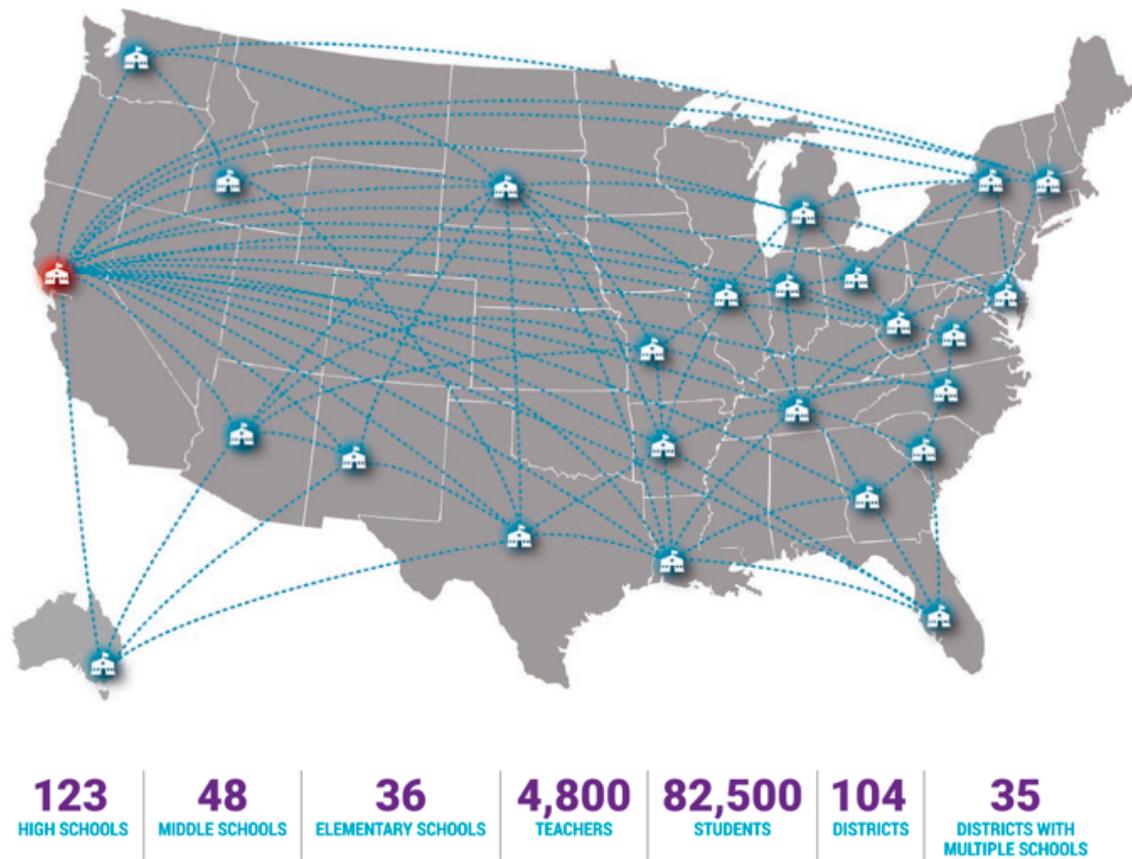
Though this era of New Tech Network's development included the creation of many schools that are still around today, some schools that opened were not successful and no longer partner with New Tech Network. In some cases, this was due to staff change or to a disconnect between the vision of the school and the district and the New Tech Network vision. For example, one school no longer affiliated with the network originally partnered with New Tech Network as a turnaround strategy. In explaining why the New Tech Network model did not take hold in that school, current New Tech Network leaders said that the New Tech model was one of numerous, competing turnaround strategies, which led to staff confusion and distracted their focus. Overall, these challenges allowed the network to better understand the different political and logistical needs of schools in different communities, paving the way for it to develop differentiated supports.

By 2012, the New Technology Foundation had changed its name to New Tech Network and opened its 100th school. According to New Tech Network's Chief Executive Officer, Lydia Dobyns, this rapid growth was due in large part to federal programs, such as Race to the Top and Investing in Innovation Fund (i3) grants introduced during the Obama administration, as well as financial support from both the Bill and Melinda Gates Foundation and the William and Flora Hewlett Foundation.²⁰ New Tech Network's growth during this time also included the development of elementary and middle school models, as New Tech Network high schools identified the need to get personalized PBL into schools earlier than 9th grade.

New Tech Network Continues to Grow While Generating Strong Student Learning Outcomes

The number of schools and districts joining New Tech Network has continued to grow, and it now partners with a total of 123 high schools, 48 middle schools, and 36 elementary schools as of the 2017–18 school year.²¹ (See Figure 1.) As the number of member schools has increased, so has the number of total students served each year. New Tech Network schools, as of the 2017–18 school year, serve a total of 82,500 students, 43% of whom are White; 28% Hispanic; 19% African American; 5% Asian/Pacific Islander; 4% multiracial or other; and 1% American Indian. Twelve percent of students at New Tech Network schools receive special education services, and 11% are English language learners.²² Approximately 58% of all students in New Tech Network schools receive free or reduced-price lunches.²³ While student demographics vary by school, many New Tech Network schools serve high percentages of students who have been racially or economically marginalized, and many New Tech Network schools exist in communities with disproportionate levels of poverty.²⁴

Figure 1
Map of New Tech Network Schools (2017–18)



Source: New Tech Network. (2018). *The power of us: New Tech Network school and student success 2018*. Napa, CA: New Tech Network.

Though numerically the network’s growth is one indicator of its success, New Tech Network thinks about success beyond the sheer number of schools and fidelity to the model. Today, as Lydia Dobyns said, “We want to be held at a higher bar: our student outcomes.”²⁵ As New Tech Network spreads its practices to more schools, it continues to be recognized for its ability to create positive outcomes for students that attend its schools. To ensure schools are supporting the learning and growth of all students, New Tech Network’s research team not only conducts its own research, but also partners with external experts to conduct research projects utilizing statistical controls, student-level data, and school-level data.

New Tech Network’s research team annually surveys schools to collect graduation rates and tracks college enrollment and persistence using the National Student Clearinghouse. This research is presented in the network’s annual impact report, a publicly available resource on the network’s website. New Tech Network’s most recent report, from 2018, shows that students, many of whom have been racially or economically marginalized, graduated from New Tech Network high schools in the 2016–17 school year at a rate of 92%, nine percentage points higher than the national average for public high school graduates in that year.²⁶

This research also shows that students graduating from New Tech Network high schools persisted in 2-year and 4-year colleges at an average rate of 83%, much higher than national averages.²⁷ New Tech Network's 2018 annual report also includes data from the College and Work Readiness Assessment administered by the Council for Aid to Education, suggesting that students in New Tech Network schools grow 42% more in higher-order thinking skills between their freshman and senior years than the comparison groups.²⁸

These findings are corroborated by several peer-reviewed studies, as is New Tech Network's success producing college- and career-readiness outcomes in high-poverty communities.²⁹ For example, the American Institutes for Research (AIR) studied the impact of New Tech Network and showed that students attending New Tech Network schools, and other deeper learning-oriented schools, demonstrate higher scores on measures of employability skills and cognitive, interpersonal, and intrapersonal competencies compared to students in non-deeper learning schools.³⁰

Similarly, a case study of Manor New Tech High School in Texas suggests that “the learning community supported by [the New Tech model] appeared to enhance student self-efficacy, and a sense of group efficacy among all those involved with the school.”³¹ External, peer-reviewed studies on New Tech Network student outcomes also suggest that students in New Tech Network schools outperform comparison students on college entrance and end-of-course exams, and that 11th-graders in New Tech Network schools outperform comparison students on ACT composite scores, cognitive competency outcomes, growth in critical thinking skills, and meeting standards on state tests.³²

As students continue demonstrating positive learning outcomes across the network, more schools and districts have become interested in partnering with the network in the hope of better supporting their students. As of 2017, New Tech Network is growing at a rate of approximately 20–25 schools per year.

Despite this rate of growth, New Tech Network as an organization employs a total of 58 network staff as of 2019.³³ Many New Tech Network staff are either part of the District and School Development Team or the School and Leadership Support Team and facilitate design, planning, and professional learning for educators in schools that partner with the network. The District and School Development team, which consists of nine staff, primarily helps to support schools as they explore the New Tech Network school model and begin the initial planning phases for their schools. One of 18 coaches on the School and Leadership Support team then works with a school as it concludes the planning process, and the same coach continues to work with the school after it opens. These coaches always work with multiple schools, and most are former teachers who have taught in New Tech Network or similar inquiry-led schools. Because New Tech Network helps schools develop the culture, infrastructure, and processes to sustain equity-oriented deeper learning practices, the network is able to reduce direct support over time and maintain a small staff relative to its total number of schools.

New Tech Network Schools Are Designed and Governed in Different Ways

New Tech Network does not operate schools. It is a nonprofit organization that partners with schools and districts either to redesign an existing school or to develop a new school. Instead of running schools, New Tech Network responds to the needs of the individual school and district while collaborating with them to support the development of one or more PBL schools and to build their capacity to sustain and continuously improve teaching and learning.

New Tech Network schools, therefore, can take several different forms depending on the state or local context. Some districts may redesign an existing school, and others may decide to open an entirely new school and partner with the network on its design. Ninety percent of New Tech Network schools operate within traditionally structured public school districts. Approximately half of New Tech Network schools function within their districts as neighborhood schools, while the other half are schools of choice within their districts through policies such as open enrollment. As of September 2018, 44% of New Tech Network schools are in urban areas, 24% are in suburban areas, and 32% are in areas designated as rural and towns.³⁴

Schools in the network can be classified as a stand-alone school or a school-within-a-school. The latter can take several forms, such as an academy within a larger high school, a New Tech Network school sharing a campus with another school, or even multiple, separate New Tech Network schools existing within one school building.

This variability in design is best illustrated by example. As the only high school campus in its district, Colleton County High School, in Walterboro, SC, has two New Tech Network schools, Cougar New Tech Entrepreneurial Academy and Health Careers Academy, that sit within one public high school building. Greenville County School District, also in South Carolina, has three different New Tech schools: a stand-alone high school that fully implements the New Tech model, a New Tech school that will serve grades 6–12 (currently serving grades 6–10 and adding a new grade each year), and a New Tech school that students must apply to be a part of that sits within a public high school building. Winton Woods, a school district near Cincinnati, OH, offers another example of this variation, as it is now a New Tech Network school district, with all of its schools, from pre-k through high school, operating under the New Tech Network model. Regardless of these variations, New Tech Network intends for its schools to work toward whole-school transformation, even if schools have to first start with a single grade level to work toward this transformation.

New Tech Network's Core Values

Regardless of the school classification or governance structure, each New Tech Network school adopts four core principles (or “design pillars,” as New Tech Network refers to them) used network-wide. (See Figure 2.) These design pillars are meant to guide schools and teachers as they make decisions, and New Tech Network believes its schools should always enact all four pillars.

In addition to a culture that empowers and teaching that engages, which are discussed in the next section, New Tech Network schools commit to designing a “technology-rich environment” in which teachers and students can use technology to create and participate in meaningful PBL experiences. Although all New Tech Network schools provide one-to-one computer access to students, learning is not done solely on a computer. Instead, New Tech Network strives for collaborative, hands-on environments in which technology is seen as a way to enable students to create, communicate, access information, and experience self-directed learning as they develop skills associated with the outcomes that matter.

Figure 2 New Tech Network’s Design Pillars

The New Tech Model for school success is based on four design pillars:

-  **Culture that Empowers**
By making learning relevant and creating a collaborative learning culture, students become connected to, engaged with, and challenged by their school, their teachers and their peers
-  **Teaching that Engages**
Through project-based learning, students become problem-solvers
-  **Technology that Enables**
Through a technology-rich environment, teachers and students create, communicate, access information, and experience self-directed learning
-  **Outcomes that Matter**
New Tech Network learning outcomes measure collaboration, written and oral communication and the development of student responsibility for their own learning, or agency

Source: New Tech Network. (2016). *Together we can create a nation proud of its public schools*. Napa, CA: New Tech Network. <https://newtechnetwork.org/wp-content/uploads/2016/07/NTN-1-Page8-24-16.pdf>.

These “outcomes that matter,” the fourth design pillar, refer to the New Tech Learning Outcomes: the skills and competencies the network believes all students need to be ready for college, their careers, and life in the 21st century. (See Table 1.) This set of outcomes connects New Tech Network’s work to deeper learning competencies, but it goes a step further by enumerating concrete skills, such as the ability to listen and comprehend when communicating effectively, seeking challenge, and growing from setbacks. The outcomes were developed over time “through collaboration with teachers, university academics, the business community, and [were] informed by research.”³⁵ These tangible skills are combined with other locally identified outcomes to form a school’s “graduate profile,” or what each school hopes its students will be able to know and do by the time he or she graduates.

Because each New Tech Network school is unique, these design pillars are important for ensuring all schools in the network have the same priorities aligned with the New Tech Network student learning vision. Among the many resources New Tech Network provides to its schools are rubrics for each design pillar so schools can regularly assess the degree to which these pillars are in place. New Tech Network supports schools in identifying barriers that stand in the way of having a culture that empowers, teaching that engages, technology that enables, and outcomes that matter. These barriers vary by location but can be anything from a bell schedule that is not conducive to teacher collaboration to needing more literacy supports for a subset of students. New Tech Network coaches typically help a school to develop creative solutions to overcome such barriers, and schools continue to reassess where they are on the design pillar rubrics as they work to continuously improve and ensure they are serving all students well.

Table 1
New Tech Network’s Learning Outcomes

Outcomes	Components
Knowledge and Thinking	Mathematical problem-solving; English language arts analysis; research and argumentation; science argument; explanation and research; social studies argument and explanation
Agency	Ownership over learning (examples include seeking feedback and active participation); development of a growth mindset (examples include seeking challenge, growing from setbacks, and building confidence)
Collaboration	Contributes ideas; equal participation; group norms; respectful tone and style; positive body language; active listening; roles; work ethic; team support
Oral Communication	Interpersonal communication (examples include listening, comprehension, and asking questions); presentation (examples include clarity, use of evidence, and use of visual material)
Written Communication	Development; organization; structure; language and conventions

Source: New Tech Network. (2018). New Tech Network Learning Outcomes. <https://newtechnetwork.org/resources/new-tech-network-learning-outcomes/> (accessed 03/14/19).

Overall, the way New Tech Network operates today has been informed by its experiences partnering with schools and districts over the last two decades. Its commitment to its core values helps ensure its schools are aligned with the same vision for student learning, but it adapts its school design in partnership with each school to ensure a successful, sustainable implementation. The following sections outline the experience of students and teachers in New Tech Network schools, as well as the structures and practices New Tech Network has in place to re-create schools in myriad locations.

New Tech Network’s School Model

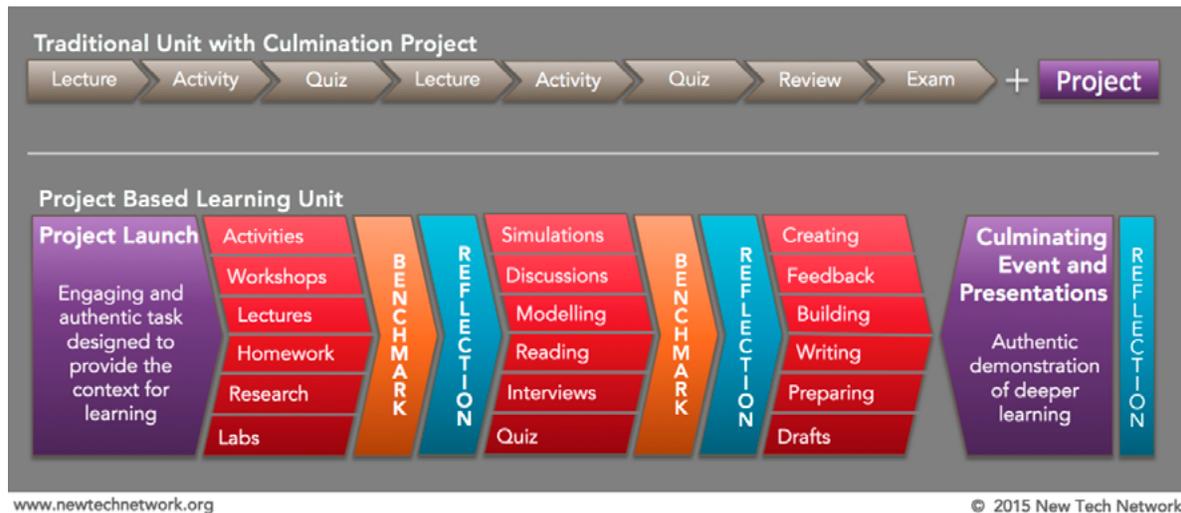
New Tech Network codesigns schools with local leaders and educators that are grounded in PBL and the creation of inclusive school environments.

Project-Based Learning at New Tech Network Schools

Both teaching and learning at New Tech Network schools are grounded in PBL. The Buck Institute for Education defines PBL as “a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge.”³⁶ As a recent American Institutes for Research (AIR) report describes, PBL also “creates connections across what students are learning in different disciplines, and between what they learn in school and situations they may encounter in the real world.”³⁷ New Tech Network chose this approach in part because it believes PBL provides all students with the learning experiences that will best prepare them for college, career, and civic participation.

New Tech Network’s version of PBL is technology-supported, allowing both students and teachers to access information, create projects, and communicate in new ways. It has also evolved to include a specific project sequence used by all students and teachers, regardless of their class subjects or grade levels. Importantly, there is a difference between doing projects and implementing PBL (see Figure 3), something we observed New Tech Network staff point out to educators numerous times during professional development events.

Figure 3
Doing Projects vs. Project-Based Learning



www.newtechnetwork.org © 2015 New Tech Network
 Source: New Tech Network. (2015). Doing projects vs. project based learning PBL. <https://newtechnetwork.org/resources/projects-vs-project-based-learning-pbl/> (accessed 05/09/19).

Though each PBL unit looks different, the process always includes

- teachers collaborating on the development of a PBL unit;
- project launch; and
- authentic demonstrations of deeper learning that include benchmarks and opportunities for reflection.

The rigorous processes described below are aimed at ensuring that every project a student engages in will help him or her develop the skills associated with the New Tech Learning Outcomes, as well as core content standards.

Project development involves rigorous planning by teachers

Teachers at New Tech Network schools are responsible for developing PBL units through a collaborative process that seeks to marry interdisciplinary content and connect with community members. Every project unit developed by a New Tech Network teacher can look different, and while some may last only a few weeks, others may last several months, or even the duration of a semester or school year.

Teachers must also make projects authentic by connecting learning to students' lives and the real world because a student should never need to ask, "Why are we learning this?" This requires a specific type of planning—one that is typically seen only in deeper learning-oriented schools. New Tech Network has developed very specific processes and resources to help teachers plan a project unit while also thinking about how to differentiate instruction to meet the needs of each student. All teachers in New Tech Network schools use these processes, and they are meant to support all teachers, regardless of whether they have formal training in PBL.

Teachers must make projects authentic by connecting learning to students' lives and the real world because a student should never need to ask, "Why are we learning this?"

The life of a project learning unit at a New Tech Network school begins with a teacher (or pair of co-teachers) using the New Tech Network Project Planning Toolkit, which includes New Tech Learning Outcomes rubrics and space for teachers to plan how they will sequence lessons, guest speakers, and formative assessments to ensure they are scaffolding the learning for students. It is here that interdisciplinary content can also be woven together, with teachers outlining how each part of a project will address a specific state learning standard or New Tech Learning Outcome skill or competency. The Project Planning Toolkit lives on Echo, New Tech Network's learning management system, which also connects teachers to a repository of projects that other teachers in the network have contributed. Teachers can use this resource for inspiration or, if applicable, can adapt a project they find on Echo.

During the learning unit planning process, teachers are also encouraged to think about opportunities to engage the community in a project, as this is a way to connect the learning to students' lives and the real world. Included in the Project Planning Toolkit is a section titled "Authenticity and Partners," which asks teachers, "How will you make this project as real-world as possible, and who will help you?" Teachers choose to involve the community and other partners in varying ways. For example, a teacher we observed in South Carolina was planning to contact a local car manufacturer to set up a visit for her physics class to watch crash-test simulations. Another New Tech Network teacher, in Florida, connected with a community member and planned a project for her students to design custom prosthetics for a three-legged dog. She titled the project Paws for Prosthetics, and it won Best in Network in 2016.³⁸ Some teachers also choose to make connections outside of their direct communities. For example, an English and World History teacher in South Carolina tapped into his college alumni network to plan a Skype session with the author of a book his students would be reading as part of their project.

As teachers near the end of the planning process, New Tech Network encourages their schools to use a collaborative, critical friends protocol developed by National School Reform Faculty.³⁹ This process involves teachers within the same school, often during common planning periods or staff meetings, sharing their draft PBL unit plans with each other. This process is an opportunity for teachers to make additional connections across content areas and get feedback on their plans. Wanda Littlejohn, the Instructional Specialist at Carolina High School and Academy, described the critical friends process at her school:

Before you launch a project, you're really vetting it to your peers, and they're giving you critical feedback. That process is the same for every teacher; every teacher has an opportunity to participate in them so they kind of see what projects are being done all around the room or all around the building.

Further describing that critical friends process, Michael Delaney, Principal at Carolina High School and Academy said:

[Teachers] have to do critical friends 2 weeks before they roll [a project] out. That means that they're getting feedback on the project to say, OK, this is good; this is bad; tweak this; change this; I like this; your next step is this. The reason we do 2 weeks before they roll it out is so they can make those adjustments; so it's not just a protocol to go through the protocol for protocol's sake. You're actually doing this for a reason, and the reason is to make your project better, or more relevant, or more meaningful, or a couple of these. There are times when we've said, after critical friends, "Nah. Go back to the drawing board. Start again. This isn't going to work. This isn't covering the standards; this isn't doing what we're trying to do."

New Tech Network provides discussion prompts for school staff to use in the critical friends process, which offer sentence stems, such as "I like ..." and "I wonder ..." to help get conversations going. Overall, the critical friends process is intended as a safe space for teachers to receive feedback on their ideas so they can continue developing their PBL units and make improvements before introducing them to students. By the end of the project planning process, teachers will have planned a project launch, developed a driving question, and have the project sequence outlined and connected to learning standards and New Tech Learning Outcomes.

Project introduction seeks to spark students' curiosity and excitement

When a teacher has completed the planning for a new PBL unit, and previous student projects in the classroom have been completed, students are introduced to their new learning unit through a series of events that New Tech Network refers to as a “project launch.” The goal for any project launch is to pique student interest, but it is up to each teacher to decide how elaborate a project launch will be. For example, the co-teachers in the Everyday Mechanics class described at the beginning of this report chose to have a project launch that involved a letter to students and a guest speaker, while a teacher at a different school in South Carolina staged a mock crime scene in the front of her school for students to explore. During the project launch, students also learn the “driving question”—the question they will seek to answer through completion of the project.

As part of the unit introduction, teachers facilitate a conversation with students to get a better sense of what students already know, what they need to know, and what the next steps should be so they can eventually answer the driving question at the end of their projects. Teachers use this as an opportunity to get a better sense of how they can build in supports throughout the course of the project unit.

For example, in the case of the Everyday Mechanics class (see the vignette at the beginning of this report), students might have identified that they need to know how to solve physics equations involving Work. The co-teachers would have then designed a series of interactive lessons that involve the use and practical application of those physics equations. Teachers keep the constructed list of what students know and need to know in a living document and revisit it with their classes throughout the duration of a project, giving students a chance to see their progress and the knowledge they've gained while also re-evaluating their next steps. This process helps teachers to plan and sequence their instruction, including when to convey information through more traditional methods and when to differentiate learning for students. This also provides them with insights about how to adjust their planned sequence of activities in a way that creates appropriate and necessary scaffolding, how to group students so they can collaborate in an effective way that challenges each group member appropriately, and how they can make progress toward the final development of a project.

Authentic assessments allow students to reflect and grow

Throughout the course of their projects, students aim to meet benchmarks set by the teacher, which can look like mini projects or performance assessments as part of the larger PBL unit. These benchmarks provide feedback to the teacher(s) to see what students are grasping and what might need to be revisited for a subset of students or even the whole class. In the case of the Everyday Mechanics example described at the beginning of this report, students learned how to conduct an interview, conducted an interview, and then presented to the class their findings from that interview. Students were also solving practice physics problems and testing their understanding of them as they completed their blueprints, and the teachers could see if students were grasping the concepts necessary to build useable devices. As students engage in group work throughout a project, they also complete peer assessments, giving teachers more data about individual student agency and how well students are collaborating and communicating with their peers.

All PBL units culminate in an authentic, performance-based assessment that can take the form of a presentation or product developed by a student or group of students. These assessments are considered authentic because they enable students to apply their knowledge in a personally meaningful way, as they are the drivers of what is ultimately developed. This can take many different forms. Students might do a presentation to a local charity, develop a website, or even build something out of raw materials, such as in Everyday Mechanics.

Assessments at New Tech Network schools are considered authentic because they enable students to apply their knowledge in a personally meaningful way, as they are the drivers of what is ultimately developed.

All students in New Tech Network schools are also assessed on common rubrics that measure whether their work demonstrates an emerging, developing, proficient, or advanced level of each New Tech Learning Outcome (knowledge and thinking, agency, collaboration, oral communication, and written communication). Teachers have been trained on how to use these rubrics, and students are aware of how their learning is assessed throughout the project process. At the end of each PBL unit, students reflect on their learning based on these outcomes and also on the project as a whole. This not only gives students an opportunity to reflect on their growth as a learner, but also gives teachers an opportunity to hear from students about their experiences with the project, giving them insight into how to improve learning units in the future.

Overall, the PBL model that New Tech Network uses in its schools seeks to facilitate the development of students' deeper learning competencies, aligned with the New Tech Learning Outcomes. Though the term "deeper learning" is a more recent addition to the education field, the skills and competencies associated with deeper learning have been recognized for decades as outcomes of meaningful learning. As we describe in the next section, New Tech Network has implemented PBL since its inception because it is an instructional approach that the network believes allows students to develop the skills and competencies they will need for their futures. By centering PBL units on real-world problems or questions; incorporating interdisciplinary standards-based tasks related to scientific inquiry, writing, and quantitative reasoning; and often requiring that students present their work publicly, New Tech Network's model aligns with research that investigates PBL as a pedagogical approach and a growing body of research that suggests PBL holds promise for deeper learning.⁴⁰

Inclusive and Supportive Learning Environments

In addition to becoming learning environments centered on PBL, New Tech Network schools are designed to be inclusive and supportive environments in which all students can thrive. As New Tech Network schools work toward having the four design pillars—culture that empowers, teaching that engages, technology that enables, and outcomes that matter—in place, they work to identify any specific barriers that stand in the way of every student developing the skills and competencies they believe are necessary for success. By doing this, New Tech Network schools aim to create learning environments that are inclusive and empower students, help students develop strong relationships, and support equitable educational opportunities for all students.

New Tech Network classrooms create a culture that empowers

Perhaps because New Tech Network schools look and feel different from traditionally structured schools, it is sometimes misperceived as something for only certain groups of students (students who are already high achievers, students who need additional supports, etc.). Despite what some perceive, New Tech Network schools actually serve any student, whether he or she is above, below, or at grade level; is an English or dual-language learner; or has an Individual Education Plan (IEP). New Tech Network schools are diverse in student ability level and create inclusive classroom environments in which the strengths of each student and his or her prior knowledge are recognized and valued. These classrooms often have students of mixed ability levels working together on challenging projects, putting teachers in the position of remediating and accelerating learning of students who enter behind while providing rigorous learning opportunities for on-grade level and honors students. Further speaking to the inclusivity of the environment, one New Tech Network school leader said in an interview:

The thing that I love about it, if you walked into a class right now, you would have no idea who's a special ed kid, who's not, whether it's learning disabled, autistic. We have one autistic student that was self-contained autistic since 6th grade, and she's been here because we had the only autism class in the district, so she came here in 6th grade, and her goal was to come to [New Tech] in 9th grade.... [Now] she's doing English and civics in [New Tech], and she's in groups, and the kids are very accepting of her.... [T]he students embrace it, and they work with her.

Similarly, we visited an Algebra II class that included students with IEPs alongside honors-level students. In this case, the teacher, Jennifer Shipp, created mixed groupings of students so that honors-level students could help students who were performing at or below grade level with the project of designing a rollercoaster. Shipp also provided the honors-level students with more challenging opportunities in the context of the group projects by encouraging them to add extra loops and turns, requiring a more advanced application of math into the design. In a follow-up interview with Shipp, she noted that creating these extra challenges actually led many other non-honors-level students to add extra loops and turns too, which accelerated their learning.

New Tech Network schools emphasize strong relationships

Teachers in New Tech Network schools actively and intentionally build relationships with their students, creating an environment of trust, respect, and responsibility. These connections promote the sense of safety and belonging that are necessary for students to fully engage in the learning opportunities that PBL provides and are different from the experiences they have likely had in the past.⁴¹

Advisories are one structure that schools use to create the conditions for learning that support student success along the developmental continuum.⁴² What this looks like, or even what it is called, can vary greatly by school, but what is common across all New Tech Network schools is the importance these classes or events have in building a positive school culture. Cougar New Tech at Colleton County High School, for example, calls its advisories “Trust Days,” and these events, which happen only a few times throughout the school year, are intentionally designed to promote a culture of trust, respect, and responsibility. Educators at New Tech Network schools, however, work

to promote this positive school culture outside of advisory events or advisory classes as well. Cougar New Tech's Director, Lauren Townsend, described the importance of this culture and how it is vital to students regardless of grade level, background, or academic performance:

You can have the most introverted student, and then all of a sudden it's like, "Oh, I'm a part of something bigger." And that is huge for a lot of our kids because they come from tough family lives, sometimes, and it's like, just being a part of a family, being a part of something bigger, having teachers that care when you come back to school from being out and aren't like, "Hey, you missed this; you missed this; you missed this." They're like, "Hey, are you OK?" And it's so simple, but it makes a world of difference.

Teachers develop trusting relationships not only with students, but also with colleagues through team teaching, peer-to-peer learning, and joint planning time. These structures help create strong, collaborative relationships among teachers and allow them to problem-solve around the needs of students. For example, the "critical friends" process described earlier is one structure New Tech Network schools use to help foster collaborative relationships, as teachers work together to improve PBL unit plans and share ideas.

New Tech Network believes that positive relationships among the adults at a school help model for students what trust, respect, and responsibility look like. Teachers aim to create environments that promote the skills, habits, and mindsets that enable self-regulation, interpersonal skills, perseverance, and resilience.⁴³ The teachers model these personal attributes too. For example, in an Advanced Placement (AP) Environmental Studies class we observed, the teacher engaged her students in conversations about culture and resilience throughout the year. In this class, she shared a recent experience of failing to accomplish something, which resulted in her feeling defeated. She talked through these feelings with her students, and they engaged in a conversation about failure being both a part of life and something to learn from.

Teachers in New Tech Network schools also model how to fail productively by stopping a project unit if it is not going the way it was imagined or is not effectively delivering the learning opportunities to students that it intended to. Michael Delaney, Principal at Carolina High School and Academy, described this happening at his school:

We've had a teacher go into a class and say, "You know what? This project is not what I thought it was going to be; we need to stop and roll out a new one." We've done that before because, just like we expect students to admit when they're wrong or something's not going right, we should do the same thing. We need to model it for the kids.

By being open about failure with her students, the AP Environmental Studies teacher demonstrated that failure is a natural part of the learning process while attempting to create a space in which her students could become more comfortable talking about it. By stopping a project that was not going according to plan, the other teacher modeled how to acknowledge failure and learn from it while also demonstrating that teachers are learners too.

New Tech Network schools support equity

Building relationships and creating a supportive and inclusive environment not only contributes to the positive school culture that New Tech Network believes is key to empowering all students; it is also a major component of New Tech Network's approach to equity. The network's approach to equity is currently based on inclusion in, and equitable access to, PBL experiences for students in all its schools regardless of race, economic status, or ability. New Tech Network's Chief Learning Officer, Megan Pacheco, explains this dedication to PBL. As a former math teacher at Napa New Technology High school, she speaks from her experience, saying:

As a math teacher, there is a way of teaching in which, if you [a student] don't have that vocabulary or that skill set, I can shut you down from the very beginning; you have no entry into that. So how do we begin to open up the learning experience so that every child has an opportunity and access into that type of learning?... That's why we use project-based learning. It creates that opening for every student to find their step in. And then after that, it's thinking about, "How do I know what you need as a student, and how do I provide that for you?" So not assuming every child needs the exact same thing, in that exact same sequence, but really thinking about, "Do you learn best by me sitting down and explaining something to you? Do you learn best by working with your peer? Do you learn best by going and being able to have space to do some inquiry on your own first, some exploration on your own?" So opening up those pathways but then also knowing where their gaps are and where their strengths are so I can leverage those in your own learning path.

Having strong pupil-teacher relationships and a supportive, inclusive environment is a necessary component of the type of teaching Pacheco describes. New Tech Network works with schools to develop the PBL structures and supports necessary so teachers can enact this equity vision and help all students achieve the skills listed in a school's graduate profile. If a New Tech Network school is not at a place in which its students are achieving the New Tech Learning Outcomes, the network works with school leaders and coaches to diagnose why and identify what needs to happen to get there. This focus on student success gets integrated into each school's culture so that faculty and staff are empowered to provide systems of academic and social-emotional learning, including personalized supports that respond to students' needs and that address adversity.⁴⁴

One rural high school in South Carolina illustrates how New Tech Network schools can provide equitable access to PBL for every student. Staff and administrators at this school realized that not all students were achieving the New Tech Learning Outcomes, and they identified low literacy to be one of the reasons. With more than 25% of their students reading well below grade level, teachers and administrators worked together to provide literacy-specific professional development activities for teachers so reading supports could be incorporated effectively and appropriately into all classes, not just language arts or reading classes. The school reported seeing significant growth in student literacy by the end of the year.

Similarly, Carolina High School and Academy in Greenville, SC, has access and inclusion at the center of its vision and motto: respectively, to "create a culture in which the school and community foster academic excellence and the social development of all students in a safe and inviting learning environment," and "Whatever it takes!"⁴⁵ Teachers and administrators have brought this vision and motto to life in many ways. For example, every student has a "parent" at the school, meaning

there is at least one teacher or administrator who is responsible for regularly checking in with the student and understanding what is going on with him or her outside of school. As another example, teachers and administrators reported hearing that students would miss school because they didn't have clean clothes, so they set up a washer and dryer in the building. Students can now bring laundry, and the administration will run loads throughout the school day. A teacher at the school also worked with students to set up a clothing closet and food pantry, filled with items donated from community members and community-based organizations. Instead of the negative stigma that could be associated with such services, students are proud and excited to use them, as they all have a hand in developing and maintaining them to support each other. Michael Delaney, Carolina High School and Academy's Principal, summed up the school's approach to meeting the needs of all students by saying:

"We really believe in developing the whole child from beginning to end. Our vision for our kids is that we form relationships with the kids to know where they are when we receive them and what they need for when they leave our school."

Our school's vision for student learning is that we help students understand their own abilities and their own method for how they learn best and how they can push themselves to be a continuous learner. In our school, it's about teaching the whole child. It's not just the curriculum. We have 100% poverty rating; we have 100% free lunch. So there's other obstacles our students have that we've got to take care of, which are emotional, psychological, as well as the curriculum part of it. We really believe in developing the whole child from beginning to end. Our vision for our kids is that we form relationships with the kids to know where they are when we receive them and what they need for when they leave our school.

As schools like these continue to identify the needs of their diverse student populations and engage with the network to strengthen their approaches to meet those needs, the network itself is evolving its equity strategy. For example, the network is transitioning away from viewing the adoption of the school model and the use of PBL as its approach to advancing educational equity. As New Tech Network's Chief Schools Officer, Jim May, described, New Tech Network is now being intentional about helping schools identify the "particular inequities in their community" and building the capacity of people to access the systems to address them.⁴⁶ New Tech Network's Chief District Officer, Jude Garnier, also noted that the network is now being more deliberate about having conversations with its districts about equity.⁴⁷ In particular, it is looking at issues of equity in its schools-within-schools, such as who is in the New Tech Network schools and how representative their student populations are of the larger community demographics. The network already requires that if schools-within-schools have an application, they must be intentional about having a student population that matches the demographics of the surrounding community. New Tech Network's national staff are now, however, asking more pointed questions about access, particularly around who is in the New Tech Network school and who is not, and what that means for those who are not in the school.

Joining the Network

Given New Tech Network’s distinct pedagogical model and commitment to inclusive and supportive learning environments, as described in previous sections, we sought to understand how the network re-creates its model throughout the country in high-quality and community-responsive ways. We found that as New Tech Network has expanded its reach over the last two decades, it has developed specific structures and processes that enable it to support schools in diverse locations throughout the country and work with educators who have varying levels of experience and familiarity with PBL. New Tech Network uses a structured planning and development process to ensure collaboration between all stakeholders and uses experiential learning and PBL as its pedagogical approach to adult learning in its professional development sessions.

New Tech Network’s approach to re-creating schools in different school systems across the country is structured so that every school goes through the same process, but the supports during that process are specific to the needs of the school and its staff. The planning process is a tight-loose-tight model, which “combines an adherence to central design principles (tight) with expected accommodations to the needs, resources, constraints, and particularities that occur in any school or district (loose), when these don’t conflict with the theoretical framework (tight) and ultimately, with the stated goals and desired results.”⁴⁸ Because of this flexibility, there are many supports that New Tech Network can provide to schools that are determined by the needs of the school and its New Tech Network coaches. In this section, we focus primarily on the key activities that are common across schools that consider joining the network and ultimately partner with New Tech Network to plan and design a school.

Partnerships Are Carefully Considered

New Tech Network does not recruit schools to join its network. Instead, schools and districts seek out New Tech Network, usually because they want to create learning environments like those described in previous sections or because they have heard about, or have seen firsthand, a successful New Tech Network school. For example, Colleton County High school, a high school created with the intention of having multiple, smaller learning communities, has two New Tech Network schools within one larger school facility that, according to its principal, Melissa Crosby, were built around the idea that students could practice their future plans in high school. Crosby described first hearing about New Tech Network because of a larger initiative within the state of South Carolina that involved other schools across the state working with New Tech Network, and decided it was right for her school.⁴⁹ While schools may have similar or common reasons for seeking out a partnership with New Tech Network, each school implementation will end up looking different but with shared core beliefs based on the New Tech Network school model.

Schools have a number of things to consider when deciding whether or not to join the network, and New Tech Network has a number of things to consider when deciding whether or not to partner with a school or district. During initial conversations that occur before any real planning begins, New Tech Network shares information about the network with administrators, teachers, community members, teachers unions, and school board members and engages in conversations with them to better understand the level of buy-in these influential stakeholders already have and their motivation for wanting a New Tech Network school (see “New Tech Network’s Relationship

With Teachers Unions,” for example). Alan Veach, one of New Tech Network’s Directors of School Development, spoke to the importance of an interested school being able to clearly articulate why it wants a New Tech Network school early in the development process. He notes that districts that can’t articulate why this work is important—to themselves internally or to community partners externally—are “never successful or it’s always a struggle.”⁵⁰

New Tech Network’s Relationship With Teachers Unions

Relationships with teachers unions vary by state, but New Tech Network will generally involve them in conversations as early as possible when partnering with a school. Alan Veach, a Director of District and School Development at New Tech Network, explains that this variation in their relationship depends on the relationship between the district and the teachers union in a given location.

New Tech Network partners with schools in locations with strong teachers unions, no teachers unions, and anything in between. For example, Veach describes teachers unions in Ohio, a state with 17 New Tech Network schools, as having “significant power.” He also describes the teachers unions in Indiana, a state with close to 30 New Tech Network schools, as being much weaker. Since Indiana is a right-to-work state, he describes unions there as only being able to negotiate salary. South Carolina, another example Veach identified, has 11 New Tech Network school partnerships and does not have a teachers union.

Veach further explains, “In those states where you have a strong teachers union, we try to engage them early. Even in a state like Indiana, where you don’t have a strong teachers union, whoever’s on that bargaining committee is often still influential among the staff, and so we would often say, ‘Make sure you bring that person along.’ Having them in the know is better than them sabotaging just because they don’t know and are making stuff up.”⁵¹

New Tech Network sees being able to establish a clear purpose and mission as a crucial first step in the process of developing a school. Over the years, New Tech Network recognized a correlation between the level of understanding of, and commitment to, the overall mission among a school and district staff and the likelihood of being able to successfully implement and sustain the school over time. As Alan Veach described:

At the district level, if they don’t have a clear commitment to why this [the New Tech Network model] is important to their school, then [when] the first financial burden comes along, that [new model] is what’s going to go. Or the first time teachers start to push back because PBL is harder than the traditional school down the road, if districts don’t have a commitment, then it’s easy to back out if they don’t really understand why they’re doing this.

This trend in particular is why New Tech Network now has a list of commitment criteria that interested schools must agree to before embarking on the planning journey. These commitment criteria include the implementation of PBL, the development of a graduate profile aligned with the New Tech Learning Outcomes, one-to-one technology for students, and participation in the full design process. All New Tech schools must also implement advisories, though the specific advisory setup can vary by school. These commitments are a product of years of trial and error by

the network, and they are what New Tech Network has determined to be the “tight” of its tight-loose-tight approach to school design. Together, these commitment criteria create the enabling conditions for the design pillars. Veach further describes these commitment criteria as what “we feel are most important in implementing our model, or I would say any model, successfully.” He also notes, “Probably our best schools meet all the commitment criteria, and schools that struggle are ones that are wavering on those commitments.”⁵²

Also included in these commitment criteria are obligations for the district, such as a requirement that a school administrator must be hired by the January before the school opens and a requirement that the district provide funds for staff to travel to New Tech Network professional development events. As an interested school engages in initial conversations with New Tech Network, it does not yet sign a contract, and it does not yet pay for New Tech Network supports; however, the school must consider how it will cover the annual cost of being a member of New Tech Network. As of 2018, New Tech Network fees range between \$35,500 and \$38,000 during design and development and between \$67,400 and \$80,000 per year for initial support implementing the school model. Mature schools pay a continuation fee (approximately \$15,000 per year) for ongoing access to the Echo platform and to national events. New Tech Network schools typically draw from their general budgets to pay this continuation fee, which can include local, state, and federal dollars.

Many schools in the network draw from federal funds that support socioeconomically disadvantaged students, rural schools, or teacher professional development, but some have also drawn on large federal initiatives, such as Race to the Top or Investing in Innovation Fund (i3) grants, in the past. Though it is less common, schools in the network may also get philanthropic support to open or sustain a school, though they eventually move to using their general funds since grant funding is typically limited. Because New Tech Network provides a variety of layered and differentiated supports, New Tech Network schools can usually reallocate the money they would have spent on other professional development providers, for example, and it is generally through reallocating existing dollars that schools pay for New Tech Network services and supports. This affordability is important to New Tech Network. As President and Chief Executive Officer Lydia Dobyms explains, “Our promise is that to sustain the school, it should cost no more than any other school in the district.”⁵³

Specific Processes Are Used to Open Each New Tech Network School

Any school district looking to open a New Tech Network school, whether it plans to transform an existing school or open a new one entirely, completes the full design process in partnership with New Tech Network before opening. This design process, which takes 9 to 18 months total, seeks to provide the new school with a clear understanding of the New Tech Network model and how it can specifically be used at the school, while also building the capacity of the school system and the educators to be able to implement PBL. New Tech Network has broken down its process into a road map, outlining the key activities for school staff. (See Figure 4.)

Figure 4
New Tech Network’s Road Map: From Investigation to Implementation

Pre-launch		Post-launch	
1) Investigate and Explore	2) Plan	3) Design and Implement	
<ul style="list-style-type: none"> • Attend Planning Track [recommended] • Attend Executive Tour 1 (Stakeholders) • Attend Executive Tour 2 (Teachers) • Attend StudyTour(s) [optional] 	<ul style="list-style-type: none"> • Identify Project Manager • Complete NTN School Application • Host Readiness Visit • Work on NTN Echo Planning Academy Competencies • Approve/Sign NTN Agreement • Identify Director • Identify Thought Partner 	<ul style="list-style-type: none"> • Send Director and Thought Partner to Leadership Residency • Identify Year 1 Staff (including Echo Tech Manager) • Send Director and Year 1 Staff to Teacher Residency • Send Director, Year 1 Staff, and Echo Tech Manager to NTN 101 	<ul style="list-style-type: none"> • Send Director & Thought Partner to Leadership Summit (Fall & Spring) • Make Year 1 Staff available for Professional Learning @ NTN • Send Director, Year 1 Staff, and Year 2 Staff to New Tech Annual Conference (NTAC)

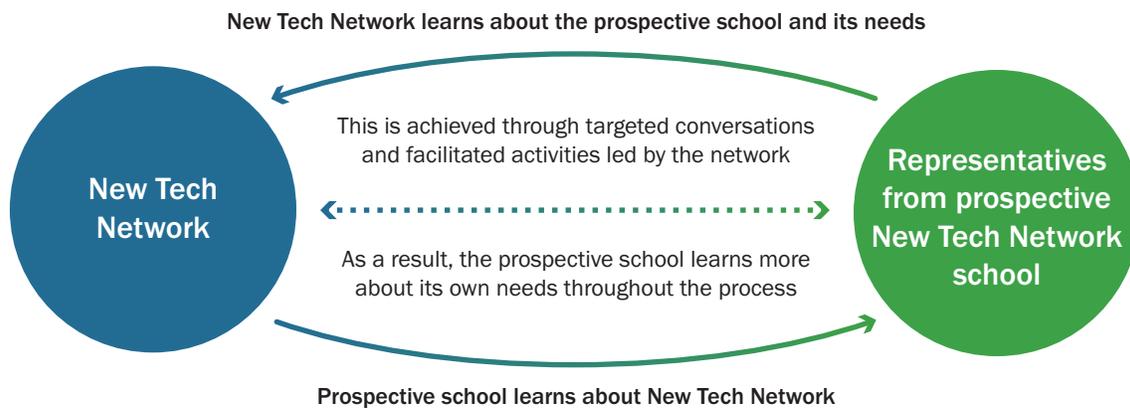
Source: New Tech Network. (2016). New Tech Network roadmap: From investigation to implementation. <https://newtechnetwork.org/resources/new-tech-network-roadmap-investigation-implementation-2017/> (accessed 03/14/19).

Although the process for opening a New Tech Network school is represented as linear in the road map, it is actually fairly fluid and driven by the timing and needs of the individual school. As Alan Veach, one of New Tech Network’s Directors of School Development, said of the process, “This is linear in theory and nonlinear in reality.”⁵⁴ Some of the activities overlap phases due to the duality of the planning process, which seeks to build educator and leader capacity for PBL while designing a new school. The planning process can begin at any time during the calendar year but will always end in the fall, in time for a new school to open at the beginning of a school year. This planning process was developed over the years as New Tech Network expanded to more schools and locations. This articulated design process still allows New Tech Network to listen to school and district needs, and it does not prescribe a single, best way to open or transform a school.

Partnerships Are Formed Based on Mutual Understanding

The first goal of the design process is for New Tech Network to become more familiar with the new school and for the new school to learn more about the network and identify its own needs. (See Figure 5.) New Tech Network uses three key processes to achieve this: executive tours, the New Tech Annual Conference, and the Readiness Visit.

Figure 5
New Tech Network’s Process for Schools Considering a Partnership



Source: Interviews with New Tech Network leaders and staff.

Executive tours

New Tech Network believes it is important for representatives from a prospective school to see an affiliated school firsthand to create a shared understanding of what teaching and learning at New Tech Network schools look like. What New Tech Network refers to as an “executive tour” is the first of multiple opportunities throughout the planning process for district and school staff to visit a New Tech Network school. Executive tours occur early in the planning process and involve representatives from a prospective school, such as teachers, a principal, district staff, or other interested or influential parties, such as community members or parents, visiting an established New Tech Network school that would serve as a good representation of what the developing school could expect to see if it opens. Veach, who leads some of New Tech Network’s executive tours, identifies three key criteria that are now typically used when setting up a visit and matching a developing school’s stakeholder group with an existing New Tech Network school. The first thing he looks for is a school that matches the demographics of the developing school. As he notes:

Until [a developing school] sees kids like theirs doing the work, they will never be able to get past that roadblock.... It’s like, “No kids are like ours. We have all these unique problems, all these things.” And then when you show them someone who looks just like themselves, they’re like, “Oh yeah, they’re just like us. We can do this too.”

Veach notes that his second priority is to take a developing school to a New Tech Network school that has a similar type of implementation. He says, “If they’re going to be a whole school, then I would like to take them to see a whole school. If they’re going to be a school-within-a-school, then [I would take them to] a school-within-a-school.” Finally, the third factor he considers when planning an executive tour is if an interested school or district has money to travel. He notes instances where the perfect school to visit may be across the country—one challenge of having a national network—and recognizes that it may not be financially feasible for a district to send the interested individuals for a visit. In this case, they would work to find a New Tech Network school to visit that is within the interested school’s travel budget but still matches its demographics and intended model as much as possible.

New Tech Network leaders said that executive tours have proven to be a key event that lays the groundwork for school staff and stakeholders to have a shared understanding of what teaching and learning look like in the New Tech Network, and this process has changed over the years. Until a few years ago, New Tech Network used only “demonstration sites,” or what the network considered to be its best schools, during executive tours. Wanda Littlejohn, the Instructional Specialist at Carolina High School and Academy, remembers the process her school went through touring New Tech Network schools. She described the importance of executive tours, explaining that she first went on a school visit with her team to a demonstration site school and decided that the New Tech Network model was not for them because it did not fit their needs as a rural, high-poverty school in South Carolina. As she continued to look at the research on PBL, she said that she and her team decided they could not “knock the research just by looking at one school.” They went on to visit five more schools, noticing that each one implemented the New Tech Network model differently, meaning it could be flexible to meet their unique needs. She continued by affirming her statement about the importance of seeing schools and seeing that they can look different. She said, “Just trying to get people on board, we had to get them out there, and you had to get them to see that, look, we can put our own spin on this.”⁵⁵

New Tech Annual Conference

In addition to the executive tours, New Tech Network also invites representatives from a new school to the New Tech Annual Conference (NTAC) to attend special sessions that seek to orient developing schools to New Tech Network as they start thinking more about their needs, their purpose, and their missions. NTAC is held every summer and is an opportunity for representatives from a prospective school to engage in a school design process, learn more about New Tech Network, meet representatives from other developing schools, and meet district leaders, school leaders, and teachers from New Tech Network schools across the network. Developing schools send at least two representatives, such as a district staff member, school leader, or teacher, to attend a special set of sessions, referred to as “the planning track.”

The goal of the planning track is for developing schools to more clearly understand New Tech Network, begin planning how the model will look in their schools, and develop a plan to share learning and next steps with the rest of their school staff. Practitioners at all levels attend a session together at the beginning of the planning track to participate in developing a shared mission statement for their school and to start building a graduate profile, which comprises the learning goals for every student at their school, incorporating the New Tech Learning Outcomes and adding additional state or local graduation requirements as necessary. Those who attend NTAC draft these and continue to develop them with the rest of their school staff at subsequent events in the planning process.

Readiness visit

After NTAC, developing schools continue to think about their needs, and a New Tech Network district and school development coach works closely with the school to better understand what supports the network staff will need to provide. New Tech Network schools submit an official application to the network along with a readiness visit agenda. Both of these documents provide schools with the opportunity to articulate their needs to New Tech Network and give the network a better sense of the type of planning and capacity supports it will need to provide throughout the

year. For the readiness agenda, New Tech Network asks the developing school to include what it knows, what it needs to know, and what it feels its next steps are in the planning process, which is reminiscent of what students are asked to do as a first step in each PBL unit. New Tech Network also includes its list of objectives for the readiness visit so the school knows exactly what it should be including in the document.

At a school's readiness visit, the New Tech Network district and school development coach—the network personnel who assists school staff during the pre-launch process—can do any number of things. For example, a coach might meet and talk with teachers, run staff through a critical friends protocol, present information about New Tech Network at an entire faculty meeting, or run teachers through a project simulation. This district and school development coach also meets with school leaders, the superintendent, board members, and if possible, parents and community members while looking for anything that might later become a barrier to effectively implementing the design pillars. Such barriers could include a school culture that does not yet support equity, in which case the network would prepare to provide additional coaching to school staff in that area.

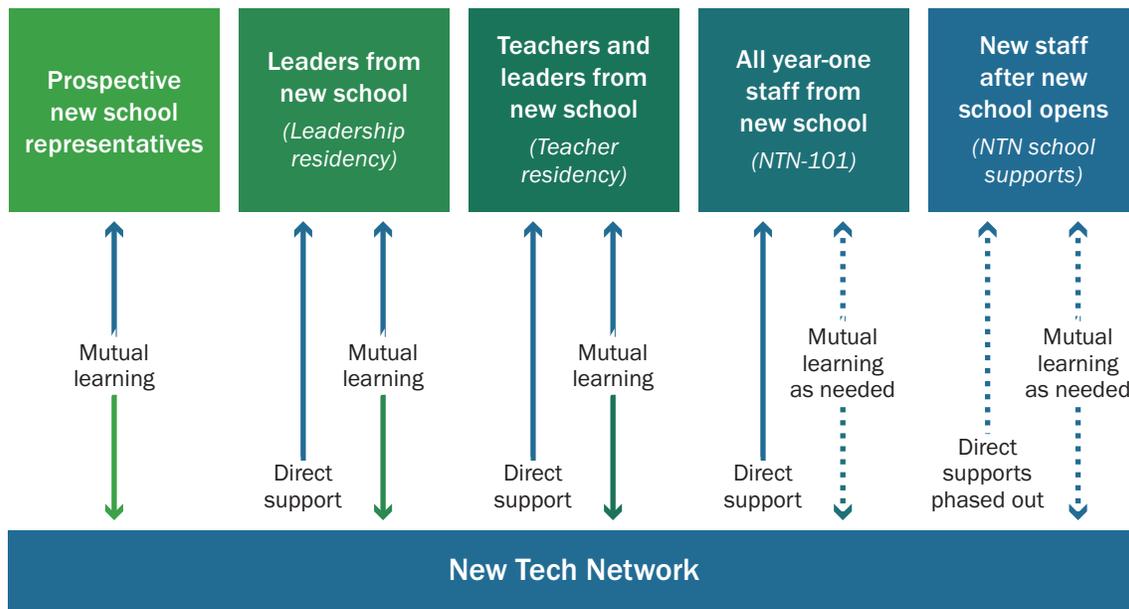
The purpose of New Tech Network's support in the beginning phase is intentionally less about professional development and more about providing information to a developing school while gathering more information about that school to better inform the planning process. It is through the executive tours, NTAC, and the readiness visit that New Tech Network is able to lay a common groundwork for each new school based on mutual understanding. Specific supports from network coaches are then provided to schools to meet their unique needs.

Development Processes Are Project-Based and Experiential to Mirror Student Learning

While understanding New Tech Network and identifying needs are both important steps for new schools, the second goal of the design process is to prepare educators to implement PBL and the New Tech Network model. New Tech Network provides support for educators at a developing school primarily through workshop-based learning opportunities, including a leadership residency for school administrators and district staff, a teacher residency, and a 5-day workshop at NTAC.

Each of these three professional development events is designed by the network to be immersive, meaning educators are experiencing PBL themselves as they develop the capacity to implement PBL in their schools and classrooms. As Wanda Littlejohn, the Instructional Specialist at Carolina High School and Academy, described of the planning process, “You’re doing PBL to create structures for PBL.”⁵⁶ New Tech Network uses this process with all schools as they develop, providing educators with PBL training regardless of whether they have been previously trained in PBL or not. New Tech Network also intentionally starts with the leadership residency so that the school administrators and district staff are prepared to provide supports to teachers as they then go through teacher residency together. (See Figure 6 for sequence of supports.) Each of the three immersive events also seeks to develop a collaborative culture among teachers, leaders, and district staff.

Figure 6
New Tech Network’s Sequence of Supports



Source: Interviews with New Tech Network leaders and staff.

Leadership Residency

New Tech Network believes an important first step in preparing teachers and leaders for the New Tech Network model is to get them out of their comfort zones to have a shared experience. New Tech Network uses this tactic with both the Leadership Residency and the Teacher Residency, as leaders and teachers attend multiday events at an established New Tech Network school, away from their own communities. The Leadership Residency is a 4-day experience, and it occurs first, in the winter prior to a new school’s opening. Who specifically attends the Leadership Residency can vary by school, but it is generally the school’s principal, or New Tech director if it is a school-within-school model, and one thought partner, such as a teacher leader or district leader. Jude Garnier, New Tech Network’s Chief District Officer, also explained, “In more and more of the implementations we’re having where we have multiple schools implementing, a district leader is in the mix there for the learning.”⁵⁷

As school leaders attend this residency at a New Tech Network school, Garnier explains that they focus on “understanding the model itself and thinking about the implications for what it means to lead that school.” The content of the residency itself provides general information about PBL, but as Jim May, New Tech Network’s Chief Schools Officer, adds, it “focuses very heavily on culture and collaboration and a shared understanding of their purpose.”⁵⁸ Leaders that attend the Leadership Residency are expected to return to their developing school teams and share this learning with their year-one staff and continue to think through the purpose and mission together. This residency also prepares leaders to help co-lead the Teacher Residency, as they become a support for the teachers who will soon be brought into the design and decision-making process at their first New Tech Network event.

Teacher Residency

The Teacher Residency is often the first opportunity for teachers to interact with New Tech Network and also seeks to get educators out of their comfort zones while having a shared experience anchored in PBL. The Teacher Residency generally occurs in the spring before a school opens, and year-one teachers, as well as the school leaders that attended the Leadership Residency, attend. To get school teams to practice collaborating while experiencing PBL, New Tech Network has school teams revisit their purpose and mission to include input from new voices, and they also work together to develop a graduate profile. (See “New Tech Network Teacher Residency” below.) As May described of the process:

We give them something they have to accomplish that we’re pretty confident they’re going to disagree about what the answer is. And then they use protocols, and [we] just coach them through the collaborative process, in the process of working on that. When Jude and I were new to the network, the really seminal one was actually that schools would articulate their own learning outcomes. And that generated a lot of conflict [and] discord, a lot of opportunities to coach around collaboration, to show them how to use protocols effectively, etc. etc. And gave them the sort of victory of having this product that they had created together by the end of that experience. I think that, that’s our basic approach, in short. That happens some through pushing them to really get concrete about their ideal graduate, where they all push on each other back and forth about what they’re after. Sometimes that’s been around grading weights—how do they assign different weights to the learning outcomes? Of course, they all disagree about that a ton.

The 2-day residency also takes place at an existing New Tech Network school that shares some similarities with the new school. As staff from the developing school are immersed in a New Tech Network school together, they have the opportunity to engage with teachers who have gone through the process they are going through and students who experience the educational practices of New Tech Network every day. This provides a developing school’s staff with the chance to ask teachers and students what it is really like in a New Tech Network school and how the New Tech Learning Outcomes, such as agency, are operationalized. At a Teacher Residency we observed, the developing school’s team was also able to observe a staff meeting in which New Tech Network teachers engaged in the critical friends process, an important step in each PBL unit planning process. This provided them with a model for how they can execute the critical friends process as they begin to plan projects, and they debriefed what they saw with their coach to better understand what they saw.

New Tech Network Teacher Residency

After a 5-hour road trip from their home district in Virginia, six teachers and their school principal meet at a New Tech Network high school in South Carolina to begin their 2-day Teacher Residency. Heather Hester, a New Tech Network School and Leadership Support Coach who is assigned to this developing school team, greets the team with a welcoming smile and a bag of miniature candy bars. As these educators sit together at a long table covered in Post-it Note pads and colored markers, Heather shares basic information about New Tech Network, including its mission and vision, and how it defines the New Tech Learning Outcomes. As she continues sharing information with this school team, she shares that she was a teacher at a New Tech Network school in Indiana, during the earlier years of the New Tech Network. She describes to the group that her first year teaching at a New Tech school was the hardest year of her teaching career. It is clear that she understands the challenges of taking on a new instructional approach, as well as the reward of seeing all students thrive in an educational setting.

The new New Tech Network school team soon learns their goal for the Teacher Residency: to develop their graduate profile. Heather facilitates the Teacher Residency using the same project sequence that teachers use in their classrooms with their students. This begins, of course, with an entry document. Each adult in the room opens a New Tech Network branded folder on his or her desk to find a letter, from Heather, welcoming the adult to the network and outlining his or her task: “to develop a presentation describing the qualities of their ideal graduate.” While only spanning the 48 hours of the Teacher Residency, this is designed to mimic almost exactly what students experience, as a way to help these teachers put themselves in the shoes of their future students.

The group begins by identifying what they already know about their hypothetical ideal graduate, what they need to know, and what their next steps are. The group identified, for example, that they need to know how to connect state standards to New Tech Learning Outcomes, and Heather writes this on poster paper to form a list of what the group needs to know. This poster remains on the wall through the entirety of the residency and is revisited and edited as the group learns more or as they have more questions.

As the group experiences this process, Heather also points out why it is an important part of the project sequence, describing it as an opportunity for teachers to get a sense of what their students are picking up on from the entry document and what they should plan to revisit. She also points out what about this process is similar to what students will do and how it is different (since the Teacher Residency is on a shorter time frame). In the Teacher Residency, for example, this group processes what they know and need to know as a group, while students in a classroom would read an entry document by themselves, do a small-group processing of what they know and need to know, and then a whole-group share-out that is compiled into knows and need to knows for the entire class.

For the majority of the Teacher Residency, the school team is participating in activities, facilitated by Heather, that are intended to develop their knowledge of how to operationalize the New Tech Learning Outcomes and put into practice processes and structures that will facilitate the development of those skills in their students. Because the Teacher Residency is happening at an existing New Tech Network school, the team also has the opportunity to learn from New Tech Network teachers and New Tech Network students. Each team member was able to explore the New Tech Network school with a student guide and ask questions about life as a New Tech Network student. After the first day, the educators are tasked with a homework assignment: to

collaboratively develop a set of decision-making protocols. The following day, they will be expected to put those protocols into action as they make decisions together about a list of qualities for their ideal graduate.

At the end of the New Tech Network Teacher Residency, the team of educators is ready to present their ideal graduate, the project they developed over the 2-day period. In a classroom, with a few New Tech Network students and New Tech Network teachers as the audience, the new school team creates a mock graduation as their presentation. One of the Teacher Residency participants stands in the center of the room, wearing a graduation cap made from construction paper. His fellow team members begin reading out the skills and competencies they have chosen to include in their graduate profile and walk across the “stage” to stick a Post-it Note with each skill or competency on him, making both students and teachers in the room laugh in the process. With this presentation, the team completes the goals of their project, which were to share what they expect all of their students to be able to do when they leave their school and to develop protocols for decision-making and collaboration that they can use with their staff. At the end of the presentation, the audience of New Tech Network students and teachers provide some feedback to the team and suggest next steps that the group can use as they continue revising their ideal graduate profile before the first day of school. As one of the teachers described in the post-presentation debrief with Heather, the residency helped make the New Tech Learning Outcomes, particularly the concept of student agency, much less abstract.

NTN-101

Several weeks before the start of the school year, year-one staff, including anyone who may have been hired since the Teacher Residency, attends NTAC for a specific set of sessions the network calls NTN-101. This 5-day experience still focuses heavily on culture and relationship building but is also the place where teams solidify their schools’ purposes, missions, and “graduate profiles.” At NTN-101, the schools’ staff also receive additional training on PBL, the use of rubrics, and grading, and it is a chance to practice using these tools before school starts. At this point in their process, not necessarily all the teachers and leaders of a developing school are on the same page, or equally bought into this new model for teaching and learning. One school group we observed did a “fist to five” temperature check on the second day of NTN-101 to see where they were at in agreeing on the new methods for grading. Only a few members of the team were at a high level of agreement. We observed that this is not an easy time for teachers, but the culture and the relationships that have been built throughout the planning process, and the commitment to their shared vision, helps drive teams forward.

Schools attending NTN-101 are grouped with other developing schools from similar regions, or from similar school contexts, and always by grade span (a high school would never be grouped with an elementary school, for example). This is also another opportunity for schools to network with other developing schools or other schools in the network that are established New Tech Network schools. By the end of NTN-101, each teacher has a planned project to implement in the fall when his or her school opens, along with a better understanding of how to approach grading and rubrics. It is important to note that while, ideally, all year-one teachers would attend NTN-101 to get this formal training, it is not uncommon for more hiring to be needed between that time and when school starts. New Tech Network coaches intentionally build the capacity of these developing schools so that they can onboard new teachers effectively.

As educators develop the capacity for a type of pedagogy, which they may never have previously experienced themselves, school leaders develop the capacity to support it. This means that not only must educators learn the technical aspects related to PBL, but many must also shift their perspectives about both the role of the teacher and what learning looks like. During the three key events (Leadership Residency, Teacher Residency, and NTN-101), New Tech Network coaches model the project-based, adult learning approaches that school leaders should use with their teachers to develop their capacity and the approaches school leaders should expect teachers to use with their students. When asked about this, New Tech Network’s Chief Schools Officer, Jim May, described New Tech Network’s approach to adult learning as “unleashing capacity” of educators rather than “training people.”⁵⁹

New Tech Network’s approach to adult learning is described as “unleashing capacity” of educators rather than “training people.”

Overall, New Tech Network’s collaborative and systematic design and development process is intended to create the conditions that can enable any school to begin implementing PBL. Through tailored, ongoing support, schools are able to deepen their commitments to PBL and support the learning of all students.

New Tech Network School Supports

Once a New Tech Network school opens, the network provides direct supports for the first few years. This direct support is slowly phased out, with the ultimate goal of each school remaining connected to the network while identifying and addressing its own needs. The work that New Tech Network does with a school before opening is crucial for getting educators aligned with a new vision for what teaching and learning look like and provides the basic, practical skills necessary to use the New Tech Network tools that help enact that vision. After a school opens, particularly in the first year, a typical New Tech Network school still needs a lot of support from the network as it faces both inevitable and unanticipated challenges.

New Tech Network’s ongoing supports to schools vary over time. (See Figure 7.) The network primarily supports new schools through the assignment of a network coach during the first few years and also provides virtual and in-person professional development opportunities, such as PBL and coach certification programs and virtual workshops. New Tech Network schools will also need to hire and train teachers that were not part of the initial planning and school development process, and schools also face challenges, such as teachers, school administrators, and/or district personnel leaving or transferring. While New Tech Network does not provide direct supports for some of these challenges, it helps New Tech Network schools build the capacity to withstand bumps in the road as much as possible. This is ultimately how New Tech Network schools are able to sustain themselves over the years as direct supports are phased out.

Figure 7
Duration of New Tech Network’s School Supports



Source: Interviews with New Tech Network leaders and staff.

New Schools Receive Implementation Support Through Coaching

New Tech Network School and Leadership Support coaches provide support to all New Tech Network schools after they open. These coaches primarily help each school diagnose and address its needs, especially as new challenges arise, and they also work closely with the instructional coach at the school to create structures for professional development at the school level. These School and Leadership Support coaches are resources for PBL knowledge; provide continuity to school teams, as they have built relationships throughout the school development process; and have an intimate understanding of the mission and vision of each school they are assigned as well as the challenges those schools may face. A School and Leadership Support coach, who is typically assigned to multiple New Tech Network schools at a time, visits each new school, on average, once a month during the first year and generally visits with less regularity in subsequent years. In between visits, these coaches communicate virtually with their schools as often as staff members need.

Because of their limited time at school sites, School and Leadership Support coaches help schools identify their needs, including barriers to having the four design pillars in place, but the specific supports the network-based coach provides depends on the individual school and its needs. Some needs, for example, arise from the New Tech Network school rolling out the model one grade level at a time, as many schools do not begin as a whole-school model. Carolina High School and Academy, for example, recognized a need to support new teachers beyond year one, so it worked with its School and Leadership Support coach to develop its own Teacher Residency that it now sustains on its own. As Wanda Littlejohn, Carolina High School and Academy's Instructional Specialist, described:

New Tech doesn't do a Teacher Residency for year two. But you have new teachers that are coming onboard that need that same experience, so we decided to develop our own year-two Teacher Residency. And so, putting that together really helped kind of smooth things out. And we've been doing our own Teacher Residency for new teachers ever since. Very difficult, but we work through it.

Another high school, Cougar New Tech at Colleton County High School, worked with its School and Leadership Support coach to develop similar teacher supports, but for new teachers that are hired to teach at the school. They created what they called an "NTN-101 course" that served as an orientation for new teachers, giving them an idea of what to expect during their first year as a teacher at a New Tech Network school. This school also worked with its coach to implement a "buddy teacher" system so new teachers could be supported by mentor teachers who are more familiar with the New Tech Network model.

Despite their role as a crucial support structure for newly partnered New Tech Network schools, School and Leadership Support coaches are not intended to be responsible for supporting all teachers and staff at a new school for ongoing periods of time. New Tech Network understands that it is not feasible for one person, who only drops in occasionally, to be responsible for the learning of an entire school's staff (especially since coaches are assigned to support more than one school). School and Leadership Support coaches, therefore, work closely with the instructional coach at the school level to identify professional development needs and determine possible ways to facilitate peer-to-peer learning. This supports the instructional coach's transition into being the leader of ongoing professional development at New Tech Network schools.

The resulting professional development structures are thus calibrated to meet the specific needs of each school community. For example, at Cougar New Tech at Colleton County High School, teachers often go to the instructional coach or the director of the school with specific problems of practice they feel they are experiencing or with specific things they want support on. The instructional coach and the school director also do frequent class observations, so they have a better sense of both the strengths and the needs of each teacher. Lauren Townsend, Director of Cougar New Tech at Colleton County High School, describes this:

During our observations, we'll look at what teachers are needing, and then the instructional coaches and myself will go back and discuss: "OK, this group of teachers are really struggling on this. These teachers are really struggling on this. What is the priority? Where do we need to prioritize?" ... I will delegate, and I'll be like, "[this person] is really, really good at that, why don't you go see one of her classes during your planning period and check out what she's doing, and then we can debrief afterwards or whatnot." But I think that this process is important for them. I know when I was teaching, an administrator coming in and watching me and giving me feedback was nowhere near as helpful as when I would go do a peer observation. And I would ask my administrator, "Hey, who's good at differentiated instruction?" And they would give me a name, and I would go observe that teacher and get ideas.

Instructional coaches stay in close communication with the network-based School and Leadership Support coaches, who continue to provide supports, such as feedback on ideas or resources, even as the direct supports phase out. Wanda Littlejohn, the Instructional Specialist at Carolina High School and Academy, describes her relationship with the network-based coach as follows:

The first year you're in New Tech Network, you have a dedicated New Tech coach that comes to your building once a month. They're on the phone with your administration once a week, and they provide [in-person] coaching and online coaching to teachers. After that first year, they don't come as often. They don't offer as much support, and they kind of back off. Since we're in our fourth year, we don't get as many visits, but our New Tech coach, I can email her right now and say, "Look. I need help with this. When can we talk?" And she'll pick up the phone and call me. So it's not like they just leave you high and dry. They're available anytime.

Overall, the School and Leadership Support coaches help newly partnered New Tech Network schools stay committed to their implementation by helping them identify new needs that come up and working through those needs. These coaches also help to shift ownership of professional development structures to the school and build the capacity of the instructional coach so that direct New Tech Network supports can be phased out over time.

Hiring Teachers at New Tech Network Schools

After a New Tech Network school opens, it will inevitably need to hire teachers. Whether that occurs right away or after the school has been open for any number of years, each New Tech Network school is responsible for its own hiring. Though the network is not directly involved in the hiring, the School and Leadership Support coaches can work with their schools to help them develop hiring practices, and the network also provides resources for schools to use, or adapt as necessary, for their hiring process. Most New Tech Network schools are part of a public school district with unique hiring procedures, so the hiring process at every New Tech Network school looks different and can depend on local policies and circumstances. According to network staff, there are approximately equal numbers of schools in right-to-work states as in collective bargaining states, and where applicable, they spend time working with teachers unions to help them understand what is being asked of their members who work in network schools.

Some New Tech Network schools have developed a rigorous hiring process to screen teacher candidates. For example, Carolina High School and Academy developed a collaborative hiring process overseen by its Instructional Specialist, Wanda Littlejohn. As Littlejohn described to us in an interview, the process includes a team of teachers, administrators, and students because the candidates will have to work with everyone. Teacher candidates must teach a sample lesson to a group of students, and then students provide feedback to the hiring team. A key feature of her process is also to be upfront with candidates about PBL, and she begins by detailing the expectations of a New Tech Network teacher in a preliminary phone call. As she describes:

Everybody's not cut out to work in a school that does teaching differently. And you have to be someone who's willing to take a risk on your own knowledge and your own comfort level to say, "Yeah. I'm willing to try it."

This openness to trying new things is one attribute New Tech Network lists in its Teacher Attributes Rubric, a resource the network provides to schools that can be used to help them screen candidates. This rubric provides recommendations based on what the network has seen work well for its schools in the past, but it can be adapted as needed based on the needs of the school. In many cases, regardless of the attributes of a new teacher, New Tech Network schools often find it necessary to shift the perspective of how a teacher views his or her role in the classroom, and the difficulty of this, as well as the strategies for doing so, varies by school. Speaking to the challenges of finding new teachers and bringing them on board with the New Tech Network model, one high school principal we spoke with noted:

When you can start with someone that has no preconceived ideas, you can grow them in [PBL]; you're going to grow them a lot faster than if you take someone who's been at it 15 years in a very traditional way [and] is very committed to that. Now keep in mind, I have folks that have been teaching for 15 years that are very committed to just tossing all of it out the door and trying something new. It's not an age thing, but there is an opportunity with new folks to grow them the way you want them to grow.

New Tech Network does not collect data on teacher retention within its schools, but school leaders we spoke with described teacher turnover being more closely associated with teachers retiring or deciding they are more comfortable in a traditional teaching model than not feeling supported or prepared.

Schools Receive Support Through Network-Led Professional Learning

Although direct school supports, such as coaching, phase out as schools develop the capacity to sustain themselves, New Tech Network offers numerous, ongoing professional learning opportunities for educators at its affiliated schools. These opportunities include virtual workshops, in-person professional development, and certification programs.

Virtual workshops

Virtual workshops through New Tech Network seek to provide educators with skills they can use directly in their schools and classrooms. These learning opportunities are offered monthly and are facilitated by New Tech Network staff members across the country. Teachers and leaders are free to attend any of these workshops that span a wide range of topics, such as *Building Leaders in Your Building* and *Integrating the Learning Outcomes Into Scaffolding*, among many others. One virtual workshop we observed, for example, was titled *Project Rollout—Launching a Project*. It focused on the entry events and planning of a PBL unit and began by asking participants, “How do you launch a project that leads down a path to student success?”

As is common in New Tech Network professional development, this workshop used a PBL model and, despite differences in geographic location, engaged participants throughout by asking them to reflect or add ideas to a chat window. Participants then went through an entry document, creating their own driving questions and problem statements, and received feedback through a mock critical friends process. The facilitator also pushed participants to think of the cultural relevancy of a sample entry document, which was a letter to students from a local grocery store, and a real entry document the facilitator used in her classroom when she was a teacher. Using her own mistake as an example that her participants could learn from, she noted, “This is for 9th-graders at an urban school. Students have never set foot in this grocery store even though it’s like three blocks away. This is a store for the folks who came into the neighborhood and gentrified it.”

In-person professional development

Though New Tech Network has created engaging virtual learning opportunities for educators to continue learning, it also provides additional in-person professional development activities on a less frequent basis. New Tech Network schools are invited back to NTAC every year for a specific set of sessions called the Improvement Through Learning track. These sessions are for schools that have been implementing New Tech Network’s model for two or more years and serve the general purpose of revisiting the mission and vision, though participants also attend workshops to work through particular needs or challenges they are experiencing. For example, in a session we observed, a challenge some schools were encountering was going deeper on student agency—they reported having students who wanted to be good students but still wanted to be told what was needed from them. New Tech Network coaches facilitating these sessions work with school representatives to explore these issues and help the school representatives fill out a phase-two planning document to take back to their schools.

Similarly, New Tech Network holds leadership summits, which are in-person opportunities that allow their site leaders to grow their professional networks and to continue improving their practice. The 3-day summit in spring 2018, for example, focused on giving leaders tools to learn from their successes, including how to reflect on and analyze success so they can continue to experiment and lead a learning organization with a sustainable culture of continuous improvement.

Certification programs

New Tech Network offers both PBL and Coach Certification programs for teachers to continue their professional learning. Teachers can go through these certification courses regardless of whether or not they were a part of the initial planning process at a New Tech Network school, meaning those who might not have been hired in time for direct training from the network on PBL have the opportunity to receive training through this program if they want to participate. Teachers must first participate in six virtual courses to become a New Tech Network Certified Teacher and can then go through Train-the-Trainer, a series of online and in-person professional development sessions intended to build the capacity of teachers to train other teachers on PBL. After these are complete, teachers can then elect to go through the New Tech Network Coach Development Program, which is also a series of online and in-person professional development sessions. Mary Katharine Thorne, a teacher at Cougar New Tech at Colleton County High School, explained the benefits of these certification programs:

Going through [a certification program] gives you a lot of professional development, and it gives you a lot of reflection tools so that you can personally reflect on your practice. It encourages you to discuss it with people and figure out what you are doing well and holding it up for them.

This process also helps build capacity to identify the professional learning needs of the school and bring that information to districtwide professional development events. Thorne continued by saying:

It's part of my job to ask those questions [about professional learning needs] and figure out exactly what it is, and then in our [districtwide] meeting as a team of New Tech coaches ... [we] bring the needs of those New Tech schools and figure out what our teachers need.

The certification process is designed to help New Tech Network re-create schools across the country because it provides opportunities for more educators to become experts in PBL and support schools and districts. Essentially, it creates a group of educators and coaches who can spread New Tech Network practices, meaning New Tech Network is not the only entity that can facilitate change in a school or district.

Schools Have Access to Ongoing, Site-Specific Supports to Address Unique Needs

Continuing as a New Tech Network school, even after the first few years, is not without challenges. Therefore, in addition to the supports provided to all New Tech Network schools after opening, New Tech Network provides any number of other supports to schools and districts as needed. For example, a strong commitment to the mission, vision, and New Tech Learning Outcomes

is necessary for a school to become self-sustaining, and turnover in school leadership, district leadership, and local school board membership can strain that commitment. When necessary, New Tech Network representatives will speak to school board members and try to build relationships, especially if the school is not having success building those relationships on its own. As this continued buy-in has proven to be more and more important, New Tech Network has also developed a series of optional supports at the district level, aimed at supporting the system for sustained New Tech Network school implementation. These supports in particular, as described later, also serve to scale New Tech Network school practices, such as PBL, districtwide.

As direct New Tech Network supports are phased out, schools can elect to stay affiliated with the network and continue receiving some supports. These supports include access to Echo, virtual workshops, and participation in NTAC. In some cases, if a school needs additional support, it can work with the network to draft a new support plan, and New Tech Network can arrange to have network-based coaches, for example, continue their visits. Over the years, approximately 90% of New Tech Network schools have chosen to remain affiliated with the network.

Scaling and Sustaining the New Tech Network Approach

New Tech Network partners with more than 200 schools across the United States, but it did not begin with the intention of growing this large and expanding its reach so wide. The formation of the network was due to the success of a few exemplary schools and the desire of other schools, which saw that success, to adopt similar practices and become exemplary themselves.

As the network has grown, its leaders and participants say its success is in large part a result of the processes it developed to re-create schools and its ability to adapt those processes to meet the needs of schools in many geographically, politically, and socioeconomically diverse settings. These processes, described in previous sections, include an extensive planning process with partner schools and districts focused on visioning and capacity building, and ongoing supports to help ensure new partner schools remain committed to equitable deeper learning practices. This section describes how New Tech Network approaches the idea of scaling, continuously improves its practices to better support schools, and supports districts that look to expand deeper learning-oriented, PBL practices within their systems.

New Tech Network Focuses on Systems Change to Spread Deeper Learning

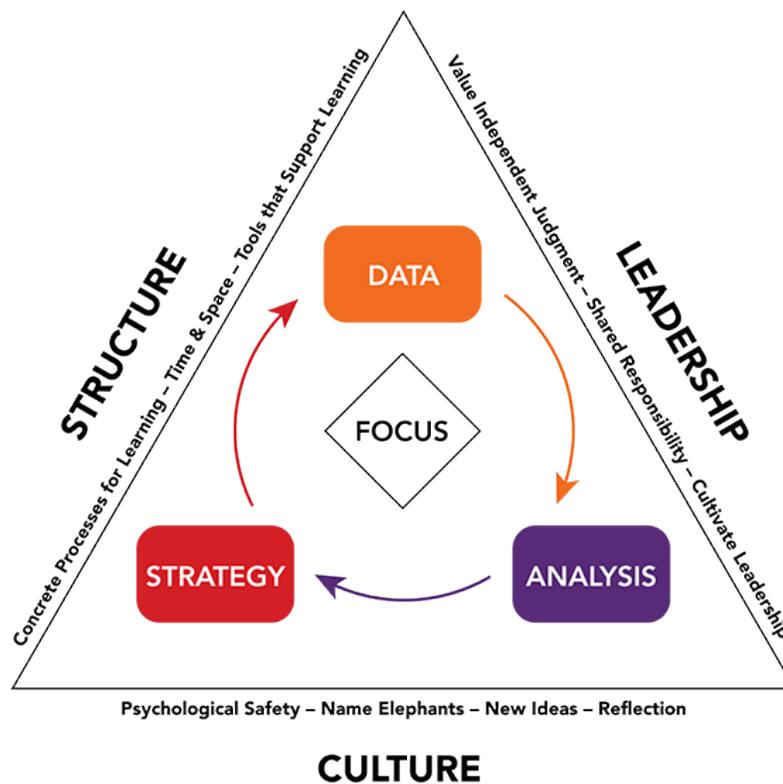
Successful scaling is often thought about in terms of numbers, and although it is the largest network of deeper learning schools, the New Tech Network does not look solely at its number of schools to determine its success. Scaling successful educational practices and policies that support all students is much different from large-scale replication of a single school model.⁶⁰ While conversations about scaling education practices continue to evolve, New Tech Network's approach to scaling its practices aligns with scaling frameworks that focus on depth, sustainability, spread, and shift in ownership, as well as frameworks that describe adaptability, symmetry between educator and student learning, and emergent strategy developed through listening to needs and gauging buy-in.⁶¹

Because the network partners with schools, it must focus on the interaction between humans and systems and use its multilayered system of supports to attend to the humans at each level of the system. It is change at the systems level that New Tech Network considers to be an indicator of success as it gets beyond changing practices in a single classroom or a single school, though that level is also important. Speaking more to its perspective on scaling, New Tech Network's Chief Learning Officer, Megan Pacheco, explained that while the network wants every child to have access to this type of learning, it "never want[s] growth [of the network] to erode the focus on quality."⁶² Working with each level of a school system helps to ensure both the quality and sustainability of deeper PBL.

Continuous Learning Enables Continuous Improvement

New Tech Network schools are able to sustain themselves over time because they each transform into a learning organization. The network pushes its schools to develop the internal capacity to learn from both failure and success and to make changes that better support all students and educators. New Tech Network has conceptualized this process into what it calls its Learning Organization Framework (Figure 8). The framework is based on the premise that any meaningful effort for change starts with a clear focus on something specific, followed by a cycle of collecting data, analyzing it to determine what is working and what is not, and strategizing to either adjust change efforts or maintain them based on that data and analysis. The leadership, structures, and culture that surround this process are the enabling, or impeding, conditions.

Figure 8
Learning Organization Framework



Source: New Tech Network. (2016). The learning organization framework. <https://newtechnetwork.org/resources/learning-organization-framework/> (accessed 04/23/19).

New Tech Network uses this framework with educators during the planning process to help orient those who may be unfamiliar with the idea of a learning organization. For example, one session at NTAC, for school leaders getting ready to implement the New Tech Network model in their schools for the first time, featured a New Tech Network coach discussing how to be a “deeper leader” and create the space for adult learning. The session began with a short video about the framework, describing the importance of data, strategy and analysis, and a focus on the specific things they are setting out to improve. The New Tech Network coach then described to the audience of approximately 60 school leaders what they might expect to see in their first year: their New Tech Network coach pushing them to focus on just one thing, such as PBL or staff collaboration, while they are newly implementing the school model. The group of school leaders then began the next activity, a micro-lab, in which they worked in small teams to think through some of the conditions in their schools that currently enable adult learning, such as the school culture or the leadership structure, and the conditions at their schools that currently impede adult learning. They finished with developing a concrete step they could take with their staff to increase their schools’ capacity as a learning organization. During the session’s debrief, one school leader stood up to share his reflection. He said that he realized during the session that some of the structures that support adult learning at his school might actually be some of the things that are impeding it. He named his school’s afternoon professional development in particular, noting that after an entire school day, his staff might not be in the most optimal mindset to learn.

While the network seeks to have each of its schools become a sustainable learning organization that can identify and address its own unique needs, the network itself adopts the same framework to continuously improve its practices. In fact, New Tech Network has made many adjustments over the years to better support schools and districts, including developing the New Tech Learning Outcomes and associated rubrics—something new schools used to be tasked with developing themselves. These adjustments and improvements are ongoing, and New Tech Network continues to adapt its processes and supports to better meet the needs of its affiliated schools.

Ongoing Partnerships and Supports Facilitate District Transformation

District personnel are key to the success and spread of New Tech Network schools across districts, whether the district supports just one New Tech Network school or several New Tech Network schools or is a full New Tech Network school district. The network engages with districts throughout the planning and implementation process but goes beyond logistical conversations about school development and contracts. Through in-person and virtual workshops, New Tech Network seeks to develop the capacity of the district so it, too, becomes a learning organization that can support one or more deeper learning–oriented schools.

These district supports take many forms. For example, district leaders are invited to NTAC to attend district-level-specific sessions. These sessions create the opportunity for district leaders considering a partnership to connect with other leaders also considering a partnership and leaders who are currently partnered. NTAC also provides opportunities for combined sessions in which district leaders can step back from their positions of power to learn alongside teachers and school leaders. In one session for district and school leaders, New Tech Network’s Chief District Officer, Jude Garnier, helped orient leaders to this new, or perhaps different, way of thinking. She reminded them that “systems are like nesting dolls. Everyone has to be a learner. Each level is responsible for the conditions of learning for the next level down.”

New Tech Network district supports have evolved over the years, in part because districts are changing how they approach New Tech Network. New Tech Network’s Chief Learning Officer, Megan Pacheco, described this change saying:

Most of the districts and schools that were coming to us, they were looking for, “We want one innovative school in our district,” you know; they were looking for that boutique school, like “We need to provide some choice in our district, so we’ll do a New Tech School.” So that was pretty common up until 5 years ago or so, and now more districts are coming to us and saying, “We realize we need to change instruction across our district, and we want your help, not just with one school, but helping us to think about how we spread these types of practices across our schools,” or that New Tech school is part of a larger strategy to spread. So we’re not the one that’s going to help it spread; they see the role of that school in the bigger strategy, so I would say most of the districts that come to us now are somewhere in that kind of thinking.

Though specific needs vary by district, New Tech Network has developed a series of supports to help districts spread practices and better support one or more New Tech Network schools. (See Table 2.)

Table 2
New Tech Network District Supports

Support	Expected Outcome
District Innovation Support	<p>District Learning Teams that help develop and/or strengthen districts' capacity to:</p> <ul style="list-style-type: none"> • monitor New Tech Network school progress and learning needs; • monitor the degree to which district structures, practices, and policies support New Tech Network school implementation of deeper learning environments; • develop effective strategies to support New Tech Network school implementation; • better align district structures, practices, and policies to New Tech Network school implementation of deeper learning; and • create structures for ongoing improvement and strategy development.
District Innovation Alignment	<p>Support that helps districts to:</p> <ul style="list-style-type: none"> • create clear structures for system learning that can continue to deepen the understanding of the district mission and how a multitude of pathways and initiatives are intended to support it; • develop a broader base of system stakeholders who can support the identification and customization of prospective pathways and initiatives; and • move toward a systemwide ability to articulate the connectedness of district pathways and initiatives to the district mission.
Visioning for Systemwide Innovation	<p>On-site workshops and virtual team planning that helps districts to:</p> <ul style="list-style-type: none"> • clearly articulate a vision for achieving deeper learning outcomes across the district; • strengthen district leadership to lead a system-wide instructional focus on deeper learning; • build a systemwide understanding of the deeper learning outcomes necessary for student success in an ever-changing world; and • create an engagement plan to build parent and community understanding of the need for focusing on deeper learning outcomes.
Coach Development Program	<p>A 2-year program that helps participants to:</p> <ul style="list-style-type: none"> • acquire an understanding of the basic tenets of high-quality PBL/ problem-based learning (PrBL); • provide effective tools and resources to teachers engaging in New Tech Network PBL/PrBL practice; • use the New Tech Network learning management system as a tool for supporting teacher practice; • acquire an articulated philosophy for supporting adult learners who are learning and implementing PBL/PrBL instructional practice; and • provide basic training in PBL/PrBL to small groups of teachers and/or coach individual teachers in their PBL/PrBL practice.

Source: New Tech Network. (n.d.). Expanding to system. <https://newtechnetwork.org/expanding-to-system/> (accessed 03/14/19).

New Tech Network’s focus on systems change is evident in the descriptions of their district supports, but beyond this, New Tech Network seeks to develop deep partnerships with school districts for the purpose of school sustainability as well as expansion of deeper learning practices within a district. For example, Greenville County School District in South Carolina, a district that has multiple New Tech Network schools, had developed a deep partnership with the network. Jeff McCoy, Associate Superintendent of Academics for Greenville County Schools, describes the need the district felt for support from the network and the support New Tech Network has provided to the district to help make New Tech Network sustainable over time:

Given how frequently superintendents turn over in districts and, a lot of times, even my position ... we really wanted to ground this deep into the district level so that it doesn’t matter if I’m here or the superintendent is here. This is in the ground so deep into the district level that someone new coming in would see the value or would be given at least such resistance of getting rid of it that it would survive. We really worked with New Tech on needing a district track for people, so after a year or two in, they started that district track and at least having some district meetings to discuss district issues because they are different than school issues.

Further describing the nature of the partnership, McCoy continued by saying:

New Tech is very responsive. They are in our district a lot, always checking in with us. While they are certainly our vendor we pay money to, we certainly look at them as a strong partner of ours because we really feel like they are part of our district versus an outside entity.

Overall, New Tech Network seeks to develop ongoing partnerships, such as its partnership with Greenville County Schools, to support the implementation and sustainability of PBL. By developing an ongoing partnership with New Tech Network, districts can work toward a systemwide vision for deeper learning that can better support students and be sustained over time. According to New Tech Network’s President and Chief Executive Officer, Lydia Dobyms, as the network continues to grow, it is particularly interested in how to partner with districts that are engaged in providing students with equitable access to effective innovations, such as the New Tech Network school model. Dobyms notes, “Increasingly, we see ways to utilize New Tech Network practices in building the will, interest, and capacity of teachers and leaders to engage in student-centered learning across their systems.”⁶³

“We see ways to utilize New Tech Network practices in building the will, interest, and capacity of teachers and leaders to engage in student-centered learning across their systems.”

While New Tech Network hopes that all students have access to this type of learning, New Tech Network’s Chief Learning Officer, Megan Pacheco, said it is “not about every school becoming a New Tech school.” By looking at scale in terms of systems change and working with districts to implement policies and practices that are aligned with deeper learning, New Tech Network can, and does, help spread deeper learning to more students. Overall, New Tech Network aims to help district leaders understand how to support the growth of PBL in the context of their unique districts and how to better support and expand deeper learning–aligned policies and practices that may already be in place.

Conclusion and Key Takeaways

What started as a vision for a single school in Napa, CA, has grown into a network of more than 200 schools, all with a shared vision of providing students with equitable learning opportunities grounded in project-based learning (PBL). New Tech Network's success, including graduating students at rates higher than the national average, has not been achieved by diluting standards or pushing struggling students out of their schools. Instead, New Tech Network intentionally builds the capacity of teachers, leaders, and districts to deeply implement and sustain its rigorous PBL model while serving students in more personalized and productive ways.

This study found that **New Tech Network helps partner schools incorporate its core values for student learning into their structures and practices to ensure a shared vision of deeper learning.** This is accomplished through the development of policies and practices that support the actualization of the New Tech Network design pillars—teaching that engages, culture that empowers, technology that enables, and outcomes that matter. Each school works toward fully implementing these design pillars, helping to ensure quality across the network. Throughout planning and implementation, New Tech Network helps each school adapt how these design pillars are actualized while providing rubrics and other materials to help schools maintain their commitments to the vision. School and district leaders seeking to spread deeper learning can use these findings to consider how their school structures and practices will need to change as they adopt a vision and a set of values that support and enable deeper learning environments.

To develop or transform schools, **New Tech Network uses a systematic planning and design process that seeks to involve key stakeholders to build local ownership in the implementation of deeper learning.** The network begins by listening to the needs of each school and district and helps them to identify and remove barriers that could stand in the way of implementing all of the New Tech Network design pillars. New Tech Network starts a partnership with a school 9 to 18 months before the school is set to open or transform, giving school staff ample time to commit to a new vision of teaching and learning, collaborate on a graduate profile, and develop the skills needed to begin implementing PBL. This collaborative codesign approach also helps develop expertise and investment among local stakeholders, which helps support quality implementation and sustainability. These findings suggest that schools and districts implementing new deeper learning initiatives should make time to deeply understand the model, engage in professional development, and work with stakeholders *before* they launch the initiative.

When collaboratively designing a school and developing the capacity of its educators, **New Tech Network facilitates professional learning that is experiential and project-based.** These learning experiences mirror what students in New Tech Network classrooms experience, giving educators multiple opportunities to put themselves in the shoes of their students and practice what they will implement. The symmetry between educator and student learning helps teachers understand the sequencing involved in New Tech Network's PBL model and the various cognitive and metacognitive skills required at different times throughout the process. These findings suggest that school and district leaders seeking to create sustainable change should engage educators in professional learning experiences that mirror the intended instructional shifts, thus enabling them to be deeply understood.

After a new school opens, **New Tech Network provides ongoing supports for educators and school leaders through coaching and professional learning that reinforce the key tenets of New Tech Network and continues to build local capacity.** Staff members in New Tech Network schools found supports crucial in the first few years as New Tech Network schools deepened their commitments to and knowledge of PBL structures and practices and continued rolling out a school implementation. In these first years, New Tech Network noted that many challenges can arise, but coaches help schools troubleshoot those challenges while building their capacity to better support themselves, sustain the model, and continuously improve in the future. Because of this, New Tech Network can phase out supports over time. These findings suggest that New Tech Network schools implementing deeper learning through PBL benefit from both high-quality curriculum materials and coaching. Other education leaders can consider employing these methods to help make shifts in instructional practice sustainable.

Opening new schools or redesigning existing schools is no easy task, but **New Tech Network continuously improves its practices to better meet the needs of educators and school systems in geographically, economically, politically diverse settings.** In addition to modeling what continuous learning and improvement look like, the network is able to adjust and adapt to changing needs to better support its educators and affiliated schools. These findings suggest that schools and districts interested in transforming their systems to better support equity-oriented deeper learning practices will need to adapt their strategies to different contexts and create systems for continuous improvement.

Overall, findings from this study illustrate the need to build and maintain school structures and practices that align with strong, equity-oriented deeper learning visions, professional supports that mirror intended instructional shifts, and systems that enable continuous improvement and collaboration. Schools and districts looking to transform their instructional practices to serve all students in more personalized and productive ways can consider the approaches described in this study to understand the many layers that must be addressed to facilitate sustainable, deeper learning-oriented systems change.

Appendix A: Methodology

This single case study was conducted as part of a multisite investigation of three networks that have partnered with traditional public school districts to create deeper learning school environments that serve the needs of all students, particularly those furthest from opportunity. The purpose of this research was to identify the systems and structures that have enabled these educational organizations to replicate their sophisticated and equity-oriented learning models in a high-quality manner. To this end, this investigation sought to answer the following questions:

1. What are the pedagogical and school features of the New Tech Network that are designed to develop students' deeper learning competencies in network schools?
2. What changes to school structures, policies, and operations have New Tech Network's pedagogical practices required or triggered? How are changes in school structures, policies, and operations enabled and supported?
3. What professional learning structures and practices does New Tech Network use to support high-quality teaching and learning across the network?
4. How do networks partner with districts, external organizations, and local communities to implement their models in ways that meet students' holistic and learning needs?
5. What challenges has New Tech Network faced in spreading the model to different sites? How has New Tech Network overcome these obstacles to ensure that students have equitable access to deeper learning experiences?

Because the study sought to surface best practices related to high-quality implementation and dissemination of deeper learning, researchers used purposeful sampling to identify networks that could be “information-rich cases.”⁶⁴ Rather than designing a study that could provide generalizable findings or demonstrate variation between and among schools, the research team sought to learn from networks that represented positive outliers—those that have demonstrated exemplary success in scaling up deeper learning practices in partnership with school districts and have supported their students' academic, social, and emotional growth, particularly among students who face adverse circumstances. Identifying the structures that have facilitated the success of these exemplar cases provides insights into the promising systems that can enable sophisticated deeper learning models to take hold, thereby highlighting lessons that can inform policy and practice.

New Tech Network is an example of an information-rich case and was thus selected as one of three networks for this investigation. The network has an exemplary track record for partnering with school districts to expand deeper learning, as evidenced by its large geographic presence and span. Furthermore, data suggests that students attending New Tech Network schools—most of whom are furthest from social and economic opportunity—are excelling academically and in noncognitive domains. (See “New Tech Network Continues to Grow While Generating Strong Student Learning Outcomes” on page 6.) Given its vast presence and impact, investigating New Tech Network allowed researchers to understand how the network has successfully instantiated its deeper learning and equity-oriented practices in unique and disparate contexts.

To answer the study's research questions, investigators conducted an in-depth case study, allowing them to examine New Tech Network dynamics in *context* and to generate a holistic understanding of network practices and their interplay with the local environment.⁶⁵ This case study methodology also enabled researchers to analyze a variety of data sources, which allowed them to assess the network as it was rather than exert control over the research sites.⁶⁶ Because case studies are sensitive to context and allow researchers to capture multiple processes and data sources, this research design was an appropriate and ideal method to elucidate the dynamic and complex ways that New Tech Network disseminates its practices.

Data Collection and Analysis

Data was collected from July 2017 to April 2018. Primary data sources for this study include interviews, observations, and documents.

Interviews

The research team conducted 19 interviews with key stakeholders, including network founders, network senior leaders, principals, teachers, and district officials in cities with New Tech Network schools. (See Table 1 for a complete list of the study's participants.) Interviews were conducted in multiple rounds. For the initial wave of interviews, the team used purposive sampling to identify network founders and senior leaders who could speak to the network's history, its evolving practices and approaches to growth, and the challenges and successes it has faced in spreading its deeper learning models in unique locales. After this first set of interviews, researchers used snowball sampling⁶⁷ to identify additional study participants, asking network leaders to recommend individuals at the network or school level that could fill in knowledge gaps and further address the study's research questions. This strategy used the knowledge and experience of New Tech Network staff to identify respondents who could best speak to systems and structures that the network develops and implements to disseminate its teaching and learning practices across the country.

Interviews were semi-structured and lasted 45–90 minutes. Interview prompts asked participants to describe the network's key pedagogical and equity practices, its replication and onboarding processes, its approach to collaborating with districts and communities, and its professional learning structures. Interviewees were also asked to discuss challenges that have emerged in the development and implementation of network systems and how the network has addressed and overcome emerging concerns. At times, the researchers tailored the protocol based on the role of the interviewee and his or her tenure with the network. This differentiation ensured that particular questions could be explored in more depth with the respondents who were most likely to hold relevant knowledge on the topic. Each interview was audio recorded for transcription purposes if the respondent gave consent to do so.

Table A1
New Tech Network Interviewees

Network Leaders <i>(n = 6)</i>	<ul style="list-style-type: none"> • Lydia Dobyns, President and CEO • Jude Garnier, Chief District Officer • Jim May, Chief Schools Officer • Megan Pacheco, Chief Learning Officer • Tim Presiado, Chief Operating Officer • Alan Veach, Director, District and School Development
Principals and Administrators <i>(n = 4)</i>	<ul style="list-style-type: none"> • Melissa Crosby, Principal, Colleton County High School • Michael Delaney, Principal, Carolina High School and Academy • Wanda Littlejohn, Instructional Specialist, Carolina High School and Academy • Lauren Townsend, Director of Cougar New Tech at Colleton County High School
Teachers and Teacher Leaders <i>(n = 9)</i>	<ul style="list-style-type: none"> • Dionna Ackerman, French Teacher, Carolina High School • J. Hunter Burgess, Science Teacher, Carolina High School • Jessica Ryan, Teacher, Cougar New Tech at Colleton County High School • Jennifer Shipp, Teacher and Coach, Cougar New Tech at Colleton County High School • Matthew Schuette, Teacher, Carolina High School • Mary Katharine Thorne, Teacher, Cougar New Tech at Colleton County High School • Teacher (does not want to be identified by name) • Teacher (does not want to be identified by name) • Teacher (does not want to be identified by name)
District Officials <i>(n = 2)</i>	<ul style="list-style-type: none"> • Jeff McCoy, Associate Superintendent, Greenville County School District • Clifton Warren, Associate Superintendent of HR and Resources, Colleton County School District

Observations

Observations comprise the second primary data source. The research team attended two professional trainings and network meetings. This included the New Tech Annual Conference (NTAC), which brings together approximately 1,200 teachers and leaders from its existing and developing schools for a week of planning and professional development, and a Teacher Residency, an immersive experience for a developing school in the spring before it opens. Attendance at these events provided insight into the network’s approach to professional development and model dissemination and allowed researchers to triangulate data retrieved from interviews and documents on New Tech Network’s professional learning supports.

The team also conducted two site visits to New Tech Network schools. They visited an established network school and one that had recently adopted the model to observe practices and to interview school leaders and teachers in more convenient locations. Visiting network sites at different stages of implementation also allowed researchers to garner a range of perspectives and insights from individuals that varied in their affiliation with the organization and familiarity with its deeper learning model. These visits were not intended to provide generalizable evidence of the network's approach to implementation and scale but rather to see different manifestations of the network's vision and the degree to which shared principles and systems guided the work at the local level.

Documents

The final data source for this study was organizational documents. The research team collected and reviewed 35 documents, including:

- Research studies: evaluation and performance reports of New Tech Network
- Administrative documents: New Tech Network policy statements, Memos of Understanding (MOUs), organization charts, web pages, presentation slides, and strategic plans
- Curriculum and assessments: training materials, curriculum overviews, classroom visuals, and rubrics for teacher feedback and performance assessment

Researchers reviewed these documents to understand the network's history, its mission and impact, and its programmatic approach for teacher and student learning. Curriculum and assessment materials also helped researchers triangulate data with regard to the continued implementation of the network's deeper learning approach and its system of professional learning supports.

Analysis

To analyze the data, the researchers engaged in a multistep process. First, they created a preliminary code list based on the ideas present in the semi-structured interview protocol. They then refined the codebook after site visits to include themes, structures, and practices that emerged from the data around the network's deeper learning and diffusion approach. In this process, researchers clarified, added, or deleted codes from the initial list to improve code definitions, minimize redundancy, and capture district dynamics.

Once the codes were refined, researchers applied them to interview transcripts, field notes, and documents using Dedoose qualitative analysis software, a web-based application for qualitative analysis. To increase inter-rater reliability, researchers met weekly or biweekly to discuss and compare their code applications in order to refine their analyses and their findings' consistency. Once coding was completed, researchers triangulated findings across multiple data sources, seeking confirmatory and disconfirmatory evidence, and developed memos of the well-substantiated points that emerged from the evidence.

Endnotes

1. Tyack, D., & Cuban, L. (1995). *Tinkering Toward Utopia: A Century of Public School Reform*. Cambridge, MA: Harvard University Press; Hewlett Foundation. (2013). Deeper learning competencies. https://www.hewlett.org/wp-content/uploads/2016/08/Deeper_Learning_Defined_April_2013.pdf (accessed 04/24/19).
2. Pellegrino, J. W., & Hilton, M. L. (Eds.) (2013). *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington, DC: National Academies Press.
3. Noguera, P., Darling-Hammond, L., & Friedlaender, D. (2015). *Equal opportunity for deeper learning. Students at the center: Deeper learning research series* (p. 30). Boston, MA: Jobs for the Future; Oakes, J. (2005). *Keeping Track: How Schools Structure Inequality* (2nd ed.). New Haven, CT: Yale University Press.
4. Tyack, D., & Cuban, L. (1995). *Tinkering Toward Utopia: A Century of Public School Reform*. Cambridge, MA: Harvard University Press; Mehta, J. D., & Fine, S. (2015). *The why, what, where, and how of deeper learning in American secondary schools. Students at the center: Deeper learning research series*. Boston, MA: Jobs for the Future.
5. Mehta, J. D., & Fine, S. (2019). *In Search of Deeper Learning: The Quest to Remake the American High School*. Cambridge, MA: Harvard University Press.
6. Noguera, P., Darling-Hammond, L., & Friedlaender, D. (2015). *Equal opportunity for deeper learning. Students at the center: Deeper learning research series* (p. 30). Boston, MA: Jobs for the Future; Oakes, J. (2005). *Keeping Track: How Schools Structure Inequality* (2nd ed.). New Haven, CT: Yale University Press.
7. New Tech Network. (2018). *The power of us: New Tech Network school and student success 2018*. Napa, CA: New Tech Network.
8. New Tech Network. (2018). *The power of us: New Tech Network school and student success 2018*. Napa, CA: New Tech Network.
9. Hewlett Foundation & Education Writers Association. (2017). Decoding deeper learning in the classroom. <https://www.hewlett.org/wp-content/uploads/2017/06/DL-guide.pdf> (accessed 05/14/19).
10. Alliance for Excellent Education. (n.d.). Teaching and learning for deeper learning. <http://deeperlearning4all.org/teaching-and-learning-for-deeper-learning> (accessed 03/14/19); Hewlett Foundation. (2013). Deeper learning competencies. https://www.hewlett.org/wp-content/uploads/2016/08/Deeper_Learning_Defined_April_2013.pdf (accessed 04/24/19).
11. Hewlett Foundation. (2013). Deeper learning competencies. https://www.hewlett.org/wp-content/uploads/2016/08/Deeper_Learning_Defined_April_2013.pdf (accessed 04/24/19).
12. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*. <https://doi.org/10.1080/10888691.2018.1537791>.
13. New Tech Network. (2017). Education leader and project-based learning pioneer discusses Manor New Tech model success. <https://newtechnetwork.org/resources/education-leader-project-based-learning-pioneer-discusses-manor-new-tech-model-success/> (accessed 03/14/19).
14. New Tech Network. (n.d.). The New Tech Network story. <https://newtechnetwork.org/our-story/> (accessed 03/14/19).
15. With support from the Bill & Melinda Gates Foundation in 2002, the New Technology Fund was launched to be able to receive grants and contributions to support the New Technology Foundation, later named New Tech Network. Schilling, S. (2010). *New Technology Foundation—1999–2009: A decade of re-creating teaching and learning*. Napa, CA: New Tech Network.
16. Bill & Melinda Gates Foundation. (n.d.). New Technology High School receives \$4.9 million from the Bill & Melinda Gates Foundation. <https://www.gatesfoundation.org/Media-Center/Press-Releases/2000/11/The-New-Technology-Foundation> (accessed 03/14/19).
17. Bill & Melinda Gates Foundation. (n.d.). New Technology High School receives \$4.9 million from the Bill & Melinda Gates Foundation. <https://www.gatesfoundation.org/Media-Center/Press-Releases/2000/11/The-New-Technology-Foundation> (accessed 03/14/19).

18. Bill & Melinda Gates Foundation. (n.d.). New Technology High School receives \$4.9 million from the Bill & Melinda Gates Foundation. <https://www.gatesfoundation.org/Media-Center/Press-Releases/2000/11/The-New-Technology-Foundation> (accessed 03/14/19).
19. Interview with Alan Veach, Director of District and School Development at New Tech Network (2018, February 2).
20. Interview with Lydia Dobyns, Chief Executive Officer at New Tech Network (2017, January 10).
21. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
22. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
23. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
24. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
25. Interview with Lydia Dobyns, Chief Executive Officer at New Tech Network (2017, January 10).
26. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
27. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
28. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
29. Bergeron, L. (2017, February). *Examining student outcomes in New Tech Network Title 1 eligible schools*. Paper presented at the Eastern Educational Research Association Annual Conference, Richmond, VA; Gordon, M., & Bergeron, L. (2018, November). *Using different data sources to address the same research questions: Evaluating the effectiveness of new curriculum on student outcomes*. Paper presented at the California Education Research Association Annual Meeting, Anaheim, CA; Lynch, S. J., Peters Burton, E., Behrend, T., House, A., Ford, M., Spillane, N., Matray, S., Han, E., & Means, B. (2018). Understanding inclusive STEM high schools as opportunity structures for underrepresented students: Critical components. *Journal of Research in Science Teaching*, 55, 712–748; Culclasure, B., Odell, M., & Stocks, E. (2017). *New Tech Network interim evaluation report: Project years 2013–14, 2014–15, and 2015–16. Expanded evaluation and i3 samples*. Greenville, SC: Furman University; Bergeron, L. (2019, February). *Reconsidering research paradigms: Using Texas end of course performance to evaluate innovation in EPISD*. Paper presented at the Southwest Educational Research Association Annual Meeting, San Antonio, TX.
30. Zeiser, K. L., Taylor, J., Rickles, J., Garet, M. S., & Segeritz, M. (2014). *Evidence of deeper learning outcomes*. Washington, DC: American Institutes for Research.
31. Lynch, S. J., Spillane, N. K., Peters Burton, E., Behrend, T. S., Ross, K. M., House, A., & Han, E. M. (2013). *Manor New Tech High School: A case study of an inclusive STEM-focused high school in Manor, Texas*. (OSPrI Report 2013-01). Washington, DC: George Washington University, Opportunity Structures for Preparation and Inspiration in STEM.
32. Culclasure, B., Odell, M., & Stocks, E. (2017). *New Tech Network interim evaluation report: Project years 2013–14, 2014–15, and 2015–16. Expanded evaluation and i3 samples*. Greenville, SC: Furman University.
33. New Tech Network. (n.d.). Who we are. <https://newtechnetwork.org/who-we-are/> (accessed 05/14/19).
34. New Tech Network. (2018). *The power of us: New Tech Network school and student success report 2018*. Napa, CA: New Tech Network.
35. New Tech Network. (2018). New Tech Network learning outcomes. <https://newtechnetwork.org/resources/new-tech-network-learning-outcomes/> (accessed 03/14/19).
36. Buck Institute for Education. (n.d.). What is PBL? http://www.bie.org/about/what_pbl (accessed 03/14/19).

37. Huberman, M., Bitter, C., Anthony, J., O'Day, J. (2014). *The shape of deeper learning: Strategies, structures, and cultures in deeper learning network high schools. Findings from the Study of Deeper Learning Opportunities and Outcomes: Report 1*. Washington, DC: American Institutes for Research.
38. Woessner, B. (2016, May 23). The 2016 Best-in-Network winner is... [Blog post]. <https://newtechnetwork.org/resources/2016-best-network-winner/>.
39. Harmony Education Center, National School Reform Faculty. (n.d.). Critical friends groups purpose and work. https://www.nsrffharmony.org/wp-content/uploads/2017/10/cfg_purpose_work_0.pdf (accessed 03/14/19).
40. Alliance for Excellent Education. (n.d.). Teaching and learning for deeper learning. <https://deeperlearning4all.org/teaching-and-learning-for-deeper-learning/> (accessed 03/14/19); Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving Schools*, 19(3), 267–277; Thomas, J. W. (2000). *A review of research on project-based learning*. San Raphael, CA: The Autodesk Foundation; Boaler, J. (1997). *Experiencing School Mathematics: Teaching Styles, Sex, and Settings*. Buckingham, UK: Open University Press; Strobel, J. & van Barneveld, A. (2009). When is PBL more effective? A meta-synthesis of meta-analyses comparing PBL to conventional classrooms. *Interdisciplinary Journal of Problem-Based Learning*, 3(1), 44–58; Belland, B. R., Ertmer, P. A., & Simons, K. D. (2006). Perceptions of the value of problem-based learning among students with special needs and their teachers. *Interdisciplinary Journal of Problem-Based Learning*, 1(2), 1–18; Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, 26(3&4), 369–398; Verma, A., Dickerson, D., & McKinney, S. (2011). Engaging students in STEM careers with project-based learning—Marine Tech Project. *Technology and Engineering Teacher*, 71(1), 25–31; ChanLin, L. (2008). Technology integration applied to project-based learning in science. *Innovations in Education and Teaching International*, 45(1), 55–65; Krishnan, S., Gabb, R., & Vale, C. (2011). Learning cultures of problem-based learning teams. *Australasian Journal of Engineering Education*, 17(2), 67–78.
41. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*. <https://doi.org/10.1080/10888691.2018.1537791>.
42. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*. <https://doi.org/10.1080/10888691.2018.1537791>.
43. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*. <https://doi.org/10.1080/10888691.2018.1537791>.
44. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*. <https://doi.org/10.1080/10888691.2018.1537791>.
45. Carolina High School and Academy. (n.d.). About us. <https://www.greenville.k12.sc.us/carolina/main.asp?titleid=about> (accessed 03/14/19).
46. Interview with Jim May, Chief Schools Officer at New Tech Network (2017, July 10).
47. Interview with Jude Garnier, Chief District Officer at New Tech Network (2017, July 9).
48. Fogarty, R. & Pete, B. M. (2010). “The Singapore Vision: Teach Less, Learn More” in Bellanca, J. & Brandt, R. (Eds.). *21st Century Skills: Rethinking How Students Learn* (pp. 97–117). Bloomington, IN: Solution Tree.
49. Interview with Melissa Crosby, Principal at Colleton County High School (2017, November 28).
50. Interview with Alan Veach, Director of District and School Development at New Tech Network (2018, February 2).
51. Interview with Alan Veach, Director of District and School Development at New Tech Network (2018, February 2).
52. Interview with Alan Veach, Director of District and School Development at New Tech Network (2018, February 2).

53. Interview with Lydia Dobyns, Chief Executive Officer at New Tech Network (2017, January 10).
54. Interview with Alan Veach, Director of District and School Development at New Tech Network (2018, February 2).
55. Interview with Wanda Littlejohn, Instructional Specialist at Carolina High School and Academy (2018, January 26).
56. Interview with Wanda Littlejohn, Instructional Specialist at Carolina High School and Academy (2018, January 26).
57. Interview with Jude Garnier, Chief District Officer at New Tech Network (2018, January 26).
58. Interview with Jim May, Chief Schools Officer at New Tech Network (2018, January 26).
59. Interview with Jim May, Chief Schools Officer at New Tech Network (2017, July 10).
60. Watkins, J., Peterson, A. & Mehta, J. (2018). *Transforming school districts to support deeper learning for all: A hypothesis*. Cambridge, MA: The Deeper Learning Dozen.
61. Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational Researcher*, 32(6), 3–12; Watkins, J., Peterson, A. & Mehta, J. (2018). *Transforming school districts to support deeper learning for all: A hypothesis*. Cambridge, MA: The Deeper Learning Dozen.
62. Interview with Megan Pacheco, Chief Learning Officer at New Tech Network (2017, July 10).
63. Personal email with Lydia Dobyns, Chief Executive Officer at New Tech Network (2019, February 21).
64. Patton, M. Q. (1990). *Qualitative Research & Evaluation Methods* (2nd ed.). Beverly Hills, CA: Sage Publications.
65. Yin, R. K. (2013). *Case Study Research: Design and Methods* (5th ed.). Thousand Oaks, CA: Sage Publications.
66. Yin, R. K. (2013). *Case Study Research: Design and Methods* (5th ed.). Thousand Oaks, CA: Sage Publications.
67. Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook* (2nd ed.). Thousand Oaks, CA: Sage Publications.

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