



PREPARING STUDENTS FOR A PROJECT-BASED WORLD

Authors:

Bonnie Lathram

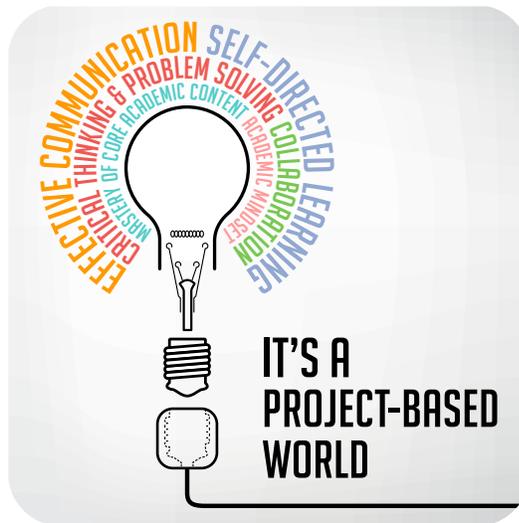
Bob Lenz

Tom Vander Ark

#ProjectBased

#DeeperLearning

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This publication is the first in a three-part series about the new economy and inequities in the preparation for student success in college, career and citizenship. The purpose of these publications is to promote equity and access to deeper learning as an outcome for all students. We aim to elevate diverse voices to ensure that all students are prepared for college, career and citizenship and that all students experience a deep engagement in their own learning.

Parts two and three of this series include *Preparing Teachers for a Project-Based World* and *Preparing Leaders for a Project-Based World*.

Preparing Teachers for a Project-Based World will highlight how teacher preparation and professional learning can be aligned to—and modeled after—the types of project-based and deeper learning environments we seek to create for students.

Preparing Leaders for a Project-Based World will illustrate examples of leadership development programs and leadership sustainability in diverse communities across the United States, highlighting leader projects and ways leaders are fostering deeper learning outcomes at scale.

To learn more, and for ways to contribute, see the [It's a Project-Based World campaign page](#) and share using #DeeperLearning and #ProjectBased.

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INTRODUCTION



Download an app and you're an [Uber](#) driver. Sign up on [99designs](#) and you're a freelance designer. Share your skills on [TaskRabbit](#) and you can do chores for hire. Make something and you can sell it on [Etsy](#).

“The future is already here – it’s just not evenly distributed.”

—William Gibson, science fiction writer

In theory, it's never been easier to work. And, it's never been easier to build an app and start a business. Application development platforms are powerful and easy to learn. The internet makes it easy to reach big audiences. Devices, computing and storage get cheaper every year. Information is readily available at the touch of a screen, and technologies are changing daily to make typical time-consuming tasks more convenient and efficient. We have countless ways to connect given the reach of the internet. There are new types of work being crafted every day.

But, the new economy requires a lot of young people.

The bar is higher and the rules have changed in five ways:



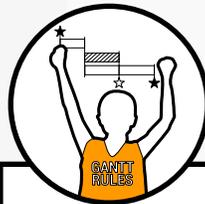
COMPETITION

The advantages are now shared with almost half of the seven billion people on earth. Anyone with an internet connection can learn to code, build an app and start a business. While talent and investment remain concentrated in innovative ecosystems, they are both becoming more widely available.



PACE

Exponential technology and globalization are driving more disruptive change and faster market cycles, making the economy more demanding and requiring continuous learning.



PROJECTS

Robots are taking over routine tasks. Nonroutine work is organized into series of projects with discrete objectives, timelines, budgets and deliverables.



FREELANCE

Soon, 40 percent of workers will freelance, and those that work for big companies find a slim employment bargain and will move frequently for advancement. Whether freelance or corporate, most people will manage or work on diverse project teams.¹



VALUE

It's not what you know; it's what you can do. Value is produced by initiating and sustaining complex work, applying design and problem-solving skills in new and nonroutine situations, and producing quality products.

PURPOSE AND AUDIENCE

The purpose of this publication is to describe why and how all students should benefit from project-based learning (PBL) in preparation for a project-based world. Our goal is to reach an audience of people inside and outside of education including teachers and education leaders and also business leaders, community members and parents.

Our message is twofold. First, there are new economic forces that require us to think through what preparation looks like for students in a world that is increasingly organized by project-based work. Second, we need to reorganize learning in ways that support preparation for all students, and particularly those who are farthest from opportunity.

We conclude this publication with recommendations and a PBL quick start guide for students, and invite feedback and commentary through our #ProjectBased hashtag and through guest blogging opportunities on GettingSmart.com. To learn more, see the [It's A Project Based-World campaign page](#).

The good news is that there's never been a better time to make a contribution. The bad news is that quality education, including postsecondary training and college, is the entry ticket, and not all students currently have access.

Research and our experience leading schools and organizations show us that **deeper learning outcomes**—like critical thinking, communication, collaboration, problem solving, self-management and persistence and being able to transfer learning to new and different situations—lead to college and career success.

At the same time, changes in our economy lead us to believe that we need to reimagine how we teach students and how we organize schools. How are we organizing schools (and ultimately, learning) to support new economic realities and encourage deeper learning outcomes?

Are students:

- » Learning how to utilize their own interests and passions to grow their skills?
- » Mastering core academic content that is relevant to the problems and challenges of their futures, and relevant to their own future careers?
- » Collaborating with others, learning complex skills and behaviors needed to successfully complete projects that one will likely encounter in college and especially career?
- » Fostering academic mindsets, cultivating executive functioning and social and emotional skills needed to be flexible, maintain and upgrade their skills in a rapidly changing economy?

One way to ensure all students achieve deeper learning outcomes is to ensure they have access to high-quality project-based learning (PBL). As defined by [Buck Institute for Education](#), PBL “is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge.”

The [Buck Institute for Education](#) (BIE) vision is that all students—no matter where they live or what their background—will have access to high-quality project-based learning (PBL) so they deepen their learning and achieve success in college, career and life. This vision is driven by a belief that:

- ⊕ PBL transforms students by inspiring them to think differently about themselves as learners, collaborators and leaders.
- ⊕ PBL prepares students for academic, personal and career success; what's more, it readies young people to rise to the challenges of their lives and the world they will inherit.
- ⊕ PBL leads students to master core academic content and builds critical thinking, problem solving, collaboration, communication and self-management skills.
- ⊕ PBL advances educational equity and empowers youth furthest from opportunity.
- ⊕ PBL enables teachers to make a difference in their students' lives—academically, socially and emotionally—and to experience the joy of teaching.

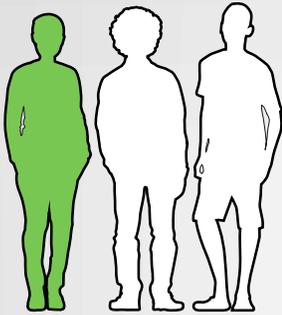
The idea that PBL can be used as a vehicle to reach all learners is reflected in a primary goal of BIE's work with teachers and leaders: "PBL is widely used and recognized as a tool to address educational inequity and to empower youth furthest from opportunity."

Dating back to 2012, [Getting Smart](#) has partnered with the William and Flora Hewlett Foundation and its partners on five publications that have served to advance the field's understanding of deeper learning:

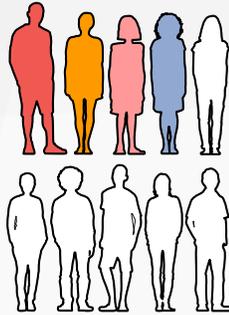
- ⊕ [How Digital Learning Contributes to Deeper Learning](#)
- ⊕ [Deeper Learning for Every Student, Every Day](#)
- ⊕ [Preparing Teachers for Deeper Learning](#)
- ⊕ [A Survey of Performance Assessment and Mastery-Tracking Tools](#)
- ⊕ [Preparing Leaders for Deeper Learning](#)

Preparing students, teachers and leaders for the project-based realities of our global economy builds upon the teacher and leadership preparation and development discussed in previous collaborations.

THE NEW ECONOMY



About **one-third** of American workers are now engaged in some kind of freelancing, or project-based, work.²



By 2020, **about four in ten** or about **91 million Americans** will be engaged in quick “gigs” and project-based work.^{3 4}



We think an **equal number** will work on or manage projects for organizations. Many people will go back and forth between **contractor and employee** for periods of time in the project-based idea economy.

“The concepts of work and career are central organizing principles in most of our lives. The notion of working full-time for a single organization, at one time a foundational idea for what constitutes a career, has been turned on its head...

Whether due to technological unemployment or an increased desire to make meaningful contributions to the world, education could come to focus on making an impact, encouraging learners to pursue learning journeys that embrace complexity, lead to deep knowledge and deeper learning outcomes, and set them up to initiate and anticipate change. Students could come to be seen as innovators and problem solvers who actively shape the world around them as part of their education. In this scenario, social impact scores rather than standardized tests could become critical metrics for schools attracting funding, partnerships and community engagement.”

—“Educating for Impact in a Project-Based World” by Jason Swanson, Director of Strategic Foresight at KnowledgeWorks

The average American adult holds a dozen jobs in his or her lifetime.⁵ In the **GenDIY** series which chronicles the lives of youth charting their own course, there are many young people who hold a dozen jobs in a decade after high school. For freelancers it can easily be a dozen jobs each year. For most workers, it will be a series of projects that mark their career rather than years of service for a particular organization.

The shift toward a new economy does have downsides. The lack of long-term stability of one career can lead to economic insecurity. Many workers can feel trapped in a low-wage cycle (see the left side of the chart below). However, there are benefits of the new economy widely enjoyed by millions of Millennials who appreciate the freedom and flexibility to build their schedule and be selective about their projects. Regardless, the evidence is clear that shifts in the economy will be a driving force for determining careers for many young people, whether by choice or necessity. Who is prepared and how is the focus of this publication and subsequent publications in this series.⁶

GIGS AND PROJECTS

Based on our research, the following table shows **gigs** defined as short term with low-skill routine tasks and **projects** defined as longer-term, non-routine deliverables, and their respective wage opportunities. It's generally true for both contractors and employees (with a few negotiated or niche exceptions).

CAREER OPTIONS IN THE FREELANCE ECONOMY

	Low skill/routine	Medium skill/rule set application	High skill/ non-routine
Short-term task (gig)	Low wage, some automation (driver)	Medium wage, high automation (legal, tax preparation, lawyer, financial planner)	Moderate wage, some automation (live-performance musician, writer, specialist)
Medium/long-term deliverable (project)	Low wage, little automation (landscaper)	Moderate wage, some automation (video production, engineer)	High wage, little automation (designer, programmer)

This chart leads to four important observations:

- » Low-skill gigs may stick around for a while, but they won't pay well.
- » Short-term rule application tasks (e.g., [tax prep](#), [legal filings](#), [financial reporting](#), financial planning) are quickly being replaced by automation.
- » High-skill short-term tasks can be lucrative, but the key is building a repeatable revenue stream (i.e., marketing).
- » The most lucrative freelance category is long-term projects requiring non-routine deliverables, content knowledge and project management—the same is true for full-time employment.

In the new economy, it's important to give everyone the chance to move from low-skill to high-skill employment for their individual success and for healthy communities. Given growing concerns over income inequality, this publication focuses on access and opportunity to high-quality, project-based learning (PBL) experiences for all young people, regardless of background.

INEQUITY: OLD AND NEW



More than one in five students lives in poverty.⁷ More than half live in or near poverty (up to 185 percent of the poverty level) and qualify for a free or reduced lunch program.⁸ Large inequities remain on measures of reading, writing and math. The achievement gap has not been closed, and although there are a few bright spots, policy changes and associated investment associated with [No Child Left Behind](#) and [Race to the Top](#) have not reduced gaps between white students and students of color.⁹

“Equity is when young people who have been underserved feel empowered to make change.”

—Gia Truong, CEO of [Envision Education](#), in a speech given at [PBL World](#) and highlighted in the article, “[8 People Who Are Inspiring What’s Possible in PBL](#)”

Much has already been written about what it takes to help genuinely and adequately prepare students for college, career and citizenship—and it has never been more important. The fact remains that for many Americans to move out of poverty and into the “middle class,” one must earn a college degree. In “[Pursuing the American Dream: Economic Mobility Across Generations](#),” a Pew Charitable Trusts Report, the authors found that nine out of 10 children “who grow up at the bottom of the income ladder but then graduate from college move up to a higher economic bracket as adults.”¹⁰ The same is not true for those without a college degree. Fewer than half move out of poverty. [The Washington Post](#) covered the inherent challenge of our education system: “Being poor is an impediment to getting the education that lifts you out of poverty.”¹¹

Almost 12 million U.S. jobs have been created post recession—and virtually all have gone to workers with at least some college credit according to the [Georgetown Center on Education and the Workforce](#) report titled “America’s Divided Recovery: College Haves and Have-Nots,” which highlighted disparities in college degree attainment.¹²

“The trend away from an economy that was anchored in high school to an economy anchored in post-secondary education and training has accelerated in the last two to three recessions,” said Carnevale. “If you can afford to send your kids to college, this is good news. If not, it’s bad news.”

College still matters, but higher costs and stagnant wages have produced a lower return on investment which means “don’t go until you’re ready” and “don’t leave without a degree.” It also means picking a college that values applied and deeper learning experience and one that supports the success of all learners.

A PROJECT-BASED WORLD



“My students aspire to be part of the global development sector – they want to represent the United Nations or launch their own initiatives to make a difference in society.

I don’t manage a classroom. I run a semester-long workathon. I don’t teach students. I guide a group of young practitioners who have to find concrete solutions for intricate challenges such as communicating about AIDS, providing clean water, improving access to education in remote areas, etc.

The future workforce in my classroom is expected to manage everything from defining the strategy to spending their very last dime....The learning process inculcates the much-needed social and emotional skills: collaboration replaces competition; problem solving overshadows rote learning and empathy eclipses jealousy.”

—“Introducing the Selfie Generation to the Real World” by Sébastien Turbot, Curator and Global Director at WISE (World Innovation Summit for Education), a Qatar Foundation initiative

Due to technological and economic change, students in high school now face a very different job market and life on planet Earth than previous generations. Robin Chase, co-founder of Zipcar, put it this way: “My father had one job in his life, I’ve had six in mine, my kids will have six at the same time.”²⁶

Deeper learning and project-based schools have seen positive results in preparing students for college, career and beyond. Let’s get specific. What kinds of experiences prepare young people for a project-based world? Here are six concrete ideas and exemplars:

6 WAYS TO PREPARE STUDENTS FOR A PROJECT-BASED WORLD



REAL-WORLD WORK

Give students real-world work like internships at [Big Picture Learning](#), integrated projects at [New Tech Network](#), applied work at [NAF](#) career academies and real customers at [NYC iSchool](#). Immersive experiences related to students' career interests can help prepare them for the future world of work.



PUBLIC SPEAKING OPPORTUNITIES

[BIE](#) notes that making a final deliverable a "Public Product" is what most differentiates PBL from traditional instruction. The film "[Most Likely to Succeed](#)" highlights [High Tech High](#) students preparing for their presentation of learning—a high stakes assessment yet one that is authentic, student-shaped and public. Presentations, be they in an intimate setting with a small team or at a large conference, are mainstay at many workplaces. We wonder.



FEEDBACK

Learners deserve real-time feedback, not just a graded deliverable. Ron Berger, [EL Education](#), says, "If the teacher isn't assessing all along the way, then the final product will not typically show the high quality of success." In most jobs, receiving in-time feedback is a standard practice, especially with the shift to using more collaborative platforms and tools. Students that are more accustomed to regular feedback will be better prepared for it in the career world.



PERSONALIZED LEARNING

Companies like [Google](#) provide just-in-time learning modules for new team leaders. Similarly, [New Tech Network](#) and [Summit Public Schools](#) provide just-in-time personalized learning to prepare students to engage in complex projects. A new generation of schools are combining the benefits of personalized learning with PBL. Thrive Public School founder Dr. Nicole Assisi said there was no risk of learning gaps at Thrive given their approach to blended and personalized learning. While blended learning rotations fill in content gaps, "project-based learning is necessary to engage learners, to build enthusiasm and support authentic work and exhibition," said Assisi. She added, "If school is just skills building and no application, where's the joy?"²⁷



TEAM WORK

The new economy encourages people to work together in groups in ways that were unprecedented a generation ago. New technology and team-based work abound in big global companies such as [Google](#) and [Microsoft](#). Giving students opportunities to collaborate may be the key to their future success. As more organizations move to team-based work, and as more students have to collaborate in teams as part of their work, providing opportunities for meaningful collaboration is important. This podcast, "[Project-Based Learning Connects Real World with Deep Impact](#)" features students from [Raisbeck Aviation High School](#) in the [Highline School District](#), where they discuss their [Flight by Design](#) course, project work in their class, and how their teacher and the students organize their work in teams. (There's even a student project manager in charge of budget and timeline).



EXPERTISE

Students should not only learn through projects, they should learn about project management and team leadership. Student should graduate from high school with a "black belt" in project management and portfolio of evidence.

WHAT GOOGLE LEARNED ABOUT HIGHLY PRODUCTIVE TEAMS

Project team effectiveness equals productivity. In 2012 [Google](#) launched a project code-named Aristotle to study why some teams worked better than others. After looking at over a hundred groups for more than a year, they [concluded](#) it was something unexpected that was key to better teams—group norms. In particular, one factor stood out more than others: creating “psychologically safe environments.” Teams that encourage safe discussions and different viewpoints succeed more. On the good teams, members spoke in roughly the same proportion, what researchers referred to as “equality in distribution of conversational turn-taking.” The good teams had high social sensitivity; they had team members that could sense how others felt based on their tone of voice, their expressions and other nonverbal cues. The Google finding suggests that it’s not only important to learn project management but that learning how to form teams and practice collaboration is key.

BECOMING A PROJECT EXPERT

If students spent five hours every school day engaged in high-quality project-based learning (PBL), they would put in more than 10,000 hours from kindergarten to graduation—and just might become expert project managers.

The idea that 10,000 hours of practice could make you an expert was popularized by Malcolm Gladwell’s book, [Outliers: The Story of Success](#), but it originated with a 1993 paper written by Anders Ericsson, a Professor at the University of Colorado, called “The Role of Deliberate Practice in the Acquisition of Expert Performance.” Ericsson says it’s not blind repetition but deliberate practice that makes all the difference. The researchers behind the 10,000-hour rule have said different fields require different amounts of deliberate practice in order for learners to become experts.

Students should have the opportunity to do their work in projects with deliberate practice to obtain high levels of expertise over time. We are encouraged by the idea that expertise through practice and through public presentations of work could be a lever to lead to deeper learning.

DEEPER AND PROJECT-BASED LEARNING



If postsecondary training is a must and the economy is shifting, what should school do to help prepare students? The increase in project-based work and the pace of technological change call into question how we best prepare students for college and career readiness and lifelong learning. The growing inequities lead us to reframe the preparation of young people for a new economy that promotes equity and deeper learning outcomes.

Project-based learning (PBL) is one way we can support deeper learning outcomes. BIE's Gold Standard PBL Design Elements differentiate a [project from an activity](#). PBL is sustained learning that requires of students a high degree of challenge. Projects should be demanding and require a public audience to showcase work. PBL creates an authentic learning experience for students. For this to work well, many different interactions and situations need to be established by the teacher, adviser or facilitator. When we talk about high-quality PBL, we mean the type of PBL that leads to deeper learning outcomes.

DEEPER LEARNING

What is working to help students prepare for entry in the new economy? [Deeper learning](#) skills such as mastery of core content, communication, critical thinking, collaboration, development of academic mindsets and learning how to learn help ensure readiness in college, career and life.

Some of the schools promoting deeper learning are part of school networks including [Big Picture Learning](#), [Internationals Network for Public Schools](#), [New Tech Network](#), [High Tech High](#), [Envision Education](#), [EL Education](#) and [EdVisions Schools](#).

BIE, a leading authority on project-based learning (PBL), is also part of the deeper learning network and partners with schools and districts across the United States to foster and encourage high-quality PBL.

BIE's [Gold Standard PBL](#) Essential Project Design Elements include:

- **Key Knowledge, Understanding and Success Skills.** The project is focused on student learning goals, including standards-based content and skills such as critical thinking/problem solving, collaboration and self-management.
- **Challenging Problem or Question.** The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge.
- **Sustained Inquiry.** Students engage in a rigorous, extended process of asking questions, finding resources and applying information.
- **Authenticity.** The project features real-world context, tasks and tools, quality standards or impact. Or it speaks to students' personal concerns, interests and issues in their lives.
- **Student Voice & Choice.** Students make some decisions about the project, including how they work and what they create.
- **Reflection.** Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them.
- **Critique & Revision.** Students give, receive and use feedback to improve their process and products.
- **Public Product.** Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

The [Deeper Learning conference](#) is held every spring at [High Tech High](#) in San Diego. To learn more about deeper learning, click below to see short videos from the conference, which include interviews from [High Tech High Graduate School of Education](#), Minnesota's [High School for the Recording Arts](#) and [New Tech Network](#).



[High School for the Recording Arts](#) student Lewis McCaleb was interviewed about the impact deeper learning experiences are having on his life. As a keynote speaker at the [Deeper Learning conference](#), Lewis, a musician, spoke about the role educators can play in shaping young people's lives. In the [Getting Smart podcast](#) featuring voices from the Deeper Learning conference, Lewis is featured first.

PBL RESULTS

PBL is working in schools, districts and networks across the country. If we want to empower the millions of students for whom college is not a given, those who do not have access to quality education and experiences, we need to provide learning experiences inside and outside of school that can help all students.

Through PBL in its classrooms, [Envision Education](#) has research to illustrate that PBL works. With a diverse population of students, primarily from low-income communities, they are achieving amazing results: 100 percent of 2016 graduates are going to either two-year or four-year colleges, with almost 80 percent accepted to four-year institutions. Most importantly, Envision Schools track graduates, and we know that 85 percent of those who enroll in college re-enroll in their second year. This means that the Envision persistence rate, which is the single best indicator of students successfully graduating from college, beats the national average by 25 percent. Envision students' accomplishments emerge from the commitment to PBL as the most rigorous and effective way to prepare them for the future.¹³

In [New Tech Network](#) (NTN) schools, 93 percent of students graduate on time. NTN students also enroll in college at a rate 9% higher than the national average, and persist in 4-year colleges at a rate of 92 percent and 2-year colleges at a rate of 74 percent.¹⁴

[High Tech High](#) (HTH) schools consist of 13 (five high schools, four middle schools, and four elementary schools) at three locations. HTH has approximately 5,000 students (63 percent students of color; 42 percent qualify for free or reduced lunch). 96 percent of graduates have gone on to college, and 66 percent to 4-year institutions.¹⁵

Evidence confirms that deeper learning environments positively influence student academic outcomes and social-emotional factors.¹⁶ A 2014 study of student performance at schools in California and New York, conducted by the [American Institutes for Research](#), found that attending deeper-learning schools had a significant positive impact, on average, on students' content knowledge and standardized-test scores. Three-fifths of the students in the study were low-income, and their scores improved just as much as the scores of the students who were above the low-income cutoff.¹⁷

As Paul Tough notes in his 2016 book, [Helping Children Succeed](#), "Deeper-learning methods, when employed well, do actually produce measurable benefits for students in poverty."¹⁸

AUTHENTIC PROJECTS BUILD SKILLS

In [Richland School District Two](#) in South Carolina, district leaders report that students experiencing project-based learning (PBL) are highly engaged and building valuable workplace skills. For example, students in a project at Blythewood Middle School tackled the question, "How can we best support the homeless population of South Carolina?"

They engaged with experts from local churches and missions as well as the Mental Health Recovery Center, interviewing these experts and getting feedback from the adult experts on the students' work in the project. Students utilized work readiness skills such as critical thinking, problem solving and communication.

FOSTERING SOCIAL-EMOTIONAL LEARNING

There is a connection between project-based learning and the social-emotional learning (often called non-cognitive skills or "soft skills") that are associated with success in college, career and life.

Researchers are finding connections between engagement in school which could be described as a student's "persistence" or "grit" and a host of other outcomes including college attendance, wages earned as an adult and likelihood of arrests later in life. In Paul Tough's book [Helping Children Succeed](#), he writes:

"A young economist at Northwestern University named Kirabo Jackson created a proxy measure for students' non-cognitive ability, using just four pieces of existing administrative data: a student's attendance, suspensions, on-time grade progression, and overall GPA. Jackson's new index measured, in a fairly crude form, how engaged the student was in school – whether he showed up, whether he misbehaved, and how hard he worked in his classes. Remarkably, Jackson found that this simple non-cognitive proxy was a better predictor than a student's test scores of whether the student would attend college, a better predictor of adult wages, and a better predictor of future arrests."

Tough cites [EL Education](#) schools which have had significant academic success with low-income students and also noted that graduates of [Envision Education](#) are persisting in college at high rates.¹⁹ PBL high schools are reporting significantly higher first-year college persistence rates than traditional high schools.²⁰

One of BIE's partner school districts, [Metropolitan Nashville Public Schools](#), has seen improvement in student outcomes as a result of its use of PBL and a career academy approach in high school. The district serves a mainly high-minority, low-income student population.

According to district data:

- » Metro Schools showed achievement gains in 9 out of 10 tested subjects. In seven of those subjects, gains were larger than the state average and as much as double statewide gains in several high school subjects.
- » The district scored a 5 out of 5 on the Tennessee Value-Added Assessment System, which measures achievement growth.
- » The district met 10 out of 11 academic targets set by the state accountability system—the highest number the district has ever met.
- » Over the last five years, the district as a whole has increased the graduation rate by 5.4 percentage points with several student subgroups improving at an even faster pace.²¹

HOW PROJECT-BASED LEARNING (PBL) IMPACTS COMMUNITIES

Solving real-world issues that matter is important to us as adults—and it's important to our students. When we bring real-world issues to the classroom and allow students to lead, we can foster community change. One school in South Carolina is doing this by tackling a daunting and important subject: human trafficking.

[Westwood High School](#) is part of the Richland School District Two, which has a strategic partnership with BIE. The school is in its third year working on a project called [Globalize 13](#). Globalize 13 is a service-learning project for secondary schools that presents lessons about slavery within the context of the 13th Amendment, the amendment that abolished slavery 150 years ago.

What started with a dialogue around slavery and reading the texts of Frederick Douglass resulted in students recognizing and doing something about modern-day slavery in their own community. The students now call themselves Modern Day Abolitionists. As a result of the project, students have started a [Facebook page](#) and a Twitter account ([@WHS_MDA](#)) to document and share the work of their campaign to create awareness of human trafficking.

EMPLOYERS BENEFIT FROM REAL-WORLD PROJECT-BASED LEARNING (PBL)

A common refrain from employers who work with students on real-world PBL: "I don't expect 16-year-olds to solve my problems. But my senior staff meets each month and proposes the same, tired approach. I know these young people will bring a new perspective, AND at least one or two of the groups will offer a solution that is worth exploring or an approach that we can refine."

The goal of education is not to create exceptional students, but to create exceptional adults with careers that will help them be self-sufficient and contribute to society as a whole while flourishing in their personal lives. PBL provides the experience and training for students to become exceptional and meet the demands of whichever field they choose. They will quickly rise above their peers, who had more traditional education.

For employers, our students become valuable partners and co-creators. The schools they attend emerge as rich resources in the community, offering direct benefits to students and participating companies and long-term growth for all.

"Students and Employers Benefit from Real-World PBL" by Dawne Adams, P-TECH Coordinator and Robin Willner, Director, Leadership Council for NYS P-TECH

Schools and districts partnered with BIE provide testimony to the power of project-based learning in transforming students and preparing them for their futures. For example, Sadiq Rahmatullah recently graduated from [Metro Nashville Public Schools](#). He arrived in the United States at age 15 with his parents as immigrants from Burma. He credits the project-based approach of his high school's health sciences career academy with jump-starting his education. In addition to the engaging focus on real-world health problems, Sadiq was able to make contact with adult experts in the field and the district's local business partners. After graduation, he was offered and has accepted an internship at the Vanderbilt University Pharmacology Department.

Preparing students, teachers and leaders for a project-based world means recognizing PBL as an approach that motivates students who may be disengaged or good at "playing the school game." In turn, the PBL approach can create a generation of students (and teachers and leaders) who are ignited by meaningful, authentic and often real-world learning, activating interests that guide them toward success in college and career, and helping to ensure deeper learning outcomes.

“Our school corporation took a leap of faith by starting a project-based learning (PBL) program, a courageous move that has changed the educational landscape of our community and region. I leaped along with a group of trailblazing ninth graders and a small handful of educators hungry for change. We went all-in with an educational model that many had written off as a fad.

Along the way, I've had the most profound professional education I've ever had. I've become an immensely better instructor than I was in my previous ten years experience; I owe this to the special dynamic that PBL both requires and creates. I learned how to work with my incredible colleagues and guide our awesome, curious and adventurous students through rich learning experiences.”

—“5 Myths of Project-Based Learning Dissected and Debunked” by Andrew Larson, educator at Columbus Signature Academy (CSA), a New Tech Network School

CHALLENGING MYTHS ABOUT PBL

Given the results that deeper learning and project-based schools and academies have had, we still see a lot of challenges to scale PBL.

One of the challenges for scaling of PBL has been the untruths, fallacies, myths and/or mediocre implementation of high-quality PBL. These fallacies survive as giant myths, impeding the opportunities for students to learn and prepare for the world outside of school. To counter the myths, we have created a list of the most commonly expressed fallacies and assembled arguments for debunking each.²²

THE COVERAGE FALLACY MYTH LOOKS AND SOUNDS LIKE THIS:

- » If I cover/teach “it,” students learn “it.”
- » Students need to master all the content in a subject area in order to be prepared for middle school...high school... and college.
- » How do I know that they learned the content if I don't teach it to them?
- » I have too much to cover to spend the time on projects.

This fallacy is based on the myth that students will not learn something unless the teacher tells them what to learn. It also holds that all students must be “taught” everything in a subject area so they will be successful at the next level.

In fact, research and other reasonable responses show the inadequacy of this illogical way of thinking. Noting that interactive learning (the kind that happens through good PBL) triples the learning outcomes for students, Craig Lambert [shares](#) evidence proving that inquiry, application, demonstration, communication and metacognition help students learn new materials and skills, as opposed to lecture or presentation-style teaching.²³

University of Oregon Professor David Conley [notes](#) that most first-year college professors assume that students do not know the course content and that they must build their courses to reintroduce information students already received in high school. In fact, they would prefer that students come more prepared for college-level work by spending time in high school acquiring “key cognitive strategies . . . like problem-solving skills, conducting research, interpreting results, and constructing quality work products.”²⁴ What this means for high school teachers is that they can worry less about covering all of the content in a particular subject and concentrate more on the cognitive skills that will help students synthesize, internalize, and use content and knowledge. Interactive learning is more effective at developing these skills than strictly lecture or presentation-based learning.

PBL, then, is important because it is a particularly powerful solution to the challenge of ensuring that real learning is happening for students, the kind of learning that transforms them and helps them make progress toward the goals they have for themselves.

THE RIGOR FALLACY LOOKS AND SOUNDS LIKE THIS:

- » If students do well on a traditional test of knowledge, then they know the material and can recall it and apply it in new situations.
- » The more homework you assign, the more rigorous your curriculum: time on task = rigor.
- » PBL is great at engaging students, but I am worried that it is not academically rigorous.

A corollary to the Coverage Myth, the Rigor Fallacy assumes that telling kids challenging content to remember and regurgitate (and lots of it) is rigor. However, there is very little relationship between this type of so-called rigor and the challenging skills and dispositions students need to master for success in college and career.

As author Tony Wagner [explains](#), “I have yet to talk to a recent graduate, college teacher, community leader, or business leader who said that not knowing enough academic content was a problem. In my interviews, everyone stressed the importance of critical thinking, communication skills and collaboration.”²⁵

Academics are rigorous when students are challenged to acquire and use new cognitive skills like the ones colleges and employers are seeking in young people. The best way to do this is by engaging students in relevant projects that result in a creative product, performance or presentation that shows the results of academic inquiry.

THE DEMOGRAPHIC FALLACY IS PRESENTED LIKE THIS:

- » PBL works well for middle class white students, but not for ours.
- » PBL works well for high school students, but not for ours.
- » PBL works well for early primary students, but not for ours.

All students should have the opportunity to learn through projects and performance assessment, and offering kids schools that help them do this is a matter of equity. Not only can PBL work with low-income students, it can also help close the achievement gap and change the economic future for students and their families.

High-quality PBL is a way for students to simultaneously:

- » Learn and master key content knowledge and skills;
- » Demonstrate and apply knowledge and skills; and
- » Learn how to learn, and build the capacity to transfer learning to new and different opportunities.

The research is clear that in order for students to both retain and apply knowledge, they have to use what they have learned for some meaningful purpose and they have to reflect on what they have learned. PBL, when well implemented, makes that possible. PBL facilitates the acquisition and retention of new knowledge, while building cognitive competencies like inquiry, analysis, research and creativity and developing deeper learning outcomes.

A CALL TO ACTION



“Deeper learning, including project-based learning (PBL), reflects the realities of the modern, global marketplace. Employers need workers who possess executive-functioning skills, as well as the practical knowledge that comes with career and technical education. We also know that the twenty-first century economy increasingly relies on a project-centric approach, which is why a curriculum that embraces project concepts better prepares students for the workplace.”

—Project-Based Learning Can Fuel Tomorrow’s Workforce by Jim Postl, former President & CEO of Pennzoil-Quaker State, the former CEO of Nabisco International, and a member of ReadyNation

Encouraging and fostering high-quality PBL for students is the work not simply of educators, parents or policymakers. It is for all of us.

We hope students will have the tools available to them to learn through projects. Let’s ensure there are opportunities for high-quality PBL at their schools, internships, clubs and organizations. Let’s emphasize to students that learning happens everywhere.

We want to ensure that teacher preparation and professional development mirrors learning environments that are also best for students.

We hope education leaders will be moved to communicate the rationale for PBL and other high-leverage and related instructional models—and will call for shifts within their school, district or network culture to make sure students and teachers have access to high-quality PBL. Leaders should also be able to access professional learning to learn in ways that mirror what we also want for students.

We hope that many in the business community will advocate for PBL, perhaps contributing their time and efforts to [mentor and support PBL](#) in their communities. This can create dialogue as well as school and business partnerships.

We hope that policymakers will read and engage in conversations about school and that this work will create opportunities for people to advocate for changes at the policy level to support high-quality PBL and deeper learning outcomes for all students.

We hope parents will [advocate](#) for high-quality and engaging learning opportunities for and with their students. When students experience (and parents see it and are involved through student-led conferences or exhibitions of their work), everyone benefits.

Preparing students, teachers and leaders for a project-based world means recognizing PBL as an approach that motivates students who may be disengaged or good at “playing the school game.” In turn, the PBL approach can create a generation of students (and teachers and leaders) who are ignited by meaningful, authentic and often real-world learning, activating interests that guide them toward success in college and career, and helping to ensure deeper learning outcomes.

RECOMMENDATIONS



All students deserve high-quality PBL. The following 10 elements are essential to making that possible:

1

PEDAGOGY

PBL should be combined with other strategies, such as personalized learning, to prepare them for challenging work.

2

ACCOUNTABILITY

To avoid some students sliding through without learning and contributing (i.e., the free rider problem), teachers should assign individual as well as team projects; students should be accountable for specific deliverables as part of team projects.

3

INTEGRATION

Students should have the opportunity to engage in integrated project-based units. Teachers should have the opportunity to team teach integrated project-based units (see upcoming paper on preparing teachers for a project-based world).

4

BADGING

Graduates should know how to manage a project and should earn a badge or a certification of project management skills which would provide a skills portfolio.

5

VOICE

As students grow in skill and self-management, they should gain increasing responsibility for defining the scope and deliverables of their projects.

6

ASSESSMENT

Students (especially in upper grades) should manage project steps and resources, but teachers should check in periodically to provide formative feedback. Final assessment should be based on a rubric agreed upon at project commencement.

7

EXHIBITIONS

Secondary students should have at least 100 opportunities to present their work—several presentations each year should include a public audience.

8

PORTFOLIOS

Students should collect artifacts of learning that reveal evidence of learning and examples of quality work product.

9

TRAINING

Teachers and EdLeaders should receive project management training to effectively manage their improvement and innovation agenda and lead the PBL environment.

10

TECH

Students and teachers deserve powerful tools to support PBL. This includes options to have a take-home device, skill-building applications and a PBL management system.

Teachers and leaders should have the opportunity to visit and experience deeper PBL environments (see upcoming paper on preparing teachers and leaders for a project-based world). The best way to learn PBL is to experience it.

In an increasingly project-based world, all students should be prepared for college, career and lifelong learning. The economic realities and the continued need to focus on ending inequities are a wake-up call to educators, businesses and those who support schools to ensure that what happens in schools is preparing students for what happens after school.

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Some organizations included in this publication are also Getting Smart partners. Getting Smart collaborates with impact organizations, schools, districts and universities dedicated to improving equity and access while advancing innovations in learning. See [our website](#) for a full list of partners.

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AUTHOR BIOS



BONNIE LATHRAM

Bonnie Lathram is a Director at Getting Smart. She leads large-scale education initiatives to create impact. Bonnie has taught elementary, middle and high school students in the United States and Tanzania. She has also led professional development for school-based teams in the US and internationally. Bonnie co-authored the book *Smart Parents: Parenting for Powerful Learning* and numerous publications.

BOB LENZ

Bob Lenz is Executive Director of the Buck Institute for Education (BIE). He began his career as a high school teacher, then co-founded Envision Education and its charter high schools in the San Francisco Bay Area, helping students become the first in their family to attend college. He was its CEO and Chief of Innovation, and is recognized nationally as a leader in high school redesign. He authored *Transforming Schools: Using Project-Based Learning, Performance Assessment and Common Core Standards*.

TOM VANDER ARK

Tom Vander Ark is CEO of Getting Smart, a learning design firm, and a partner at Learn Capital, an education venture fund. Tom is author of *Getting Smart: How Digital Learning is Changing the World* and *Smart Cities That Work for Everyone: 7 Keys to Education & Employment*. He advocates for innovations that customize and motivate learning and extend access. Previously he served as the first Executive Director of Education for the Bill & Melinda Gates Foundation. Tom served as a public school superintendent in Washington State and has extensive private sector experience. Tom serves on several nonprofit boards including Imagination Foundation.