

HUNDRED RESEARCH REPORT #015

Spotlight: Learning Forerunners Across America

Report

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SPOTLIGHT: LEARNING FORERUNNERS ACROSS AMERICA

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Foreword from Gregg Behr / The Grable Foundation & Remake Learning

Survey the forerunners of any innovation – whether in medicine, music, robotics, or other fields – and you’ll almost always find one or two people who’ve lived and worked in Pittsburgh.

In the 1950s, Jonas Salk revolutionized public health by developing a safe, effective polio vaccine at the University of Pittsburgh School of Medicine. Pianist Ahmad Jamal pushed the boundaries of jazz music, changing how players use texture and space. And with her 1962 book, *Silent Spring*, ecologist Rachel Carson helped make environmentalism a mainstream movement.

It was Carson who showed the world just how fragile its ecosystems are, and just how inspiring they can be for adults and children alike. “If a child is to keep alive his inborn sense of wonder,” she wrote, “he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement, and mystery of the world we live in.”

When we first launched Remake Learning Days in 2016, that’s exactly what we set out to provide: opportunities for families to rediscover the “learning ecosystems” in their own communities. As children and adults moved side-by-side through

Survey the forerunners of any innovation, and you'll almost always find one or two people who've lived and worked in Pittsburgh.

schools, libraries, gardens, art museums, tech startups, and more, they started to see learning differently – not as an act confined to classrooms or to childhood, but as something that happens everywhere, at any age. They started to see learning not as a passive, one-way transfer of knowledge and skills, but as a playful, collaborative exchange among children, educators, and everyone else with a stake in young people's futures.

Sometimes, of course, those exchanges fail. But other times, they lead to something magic – something wholly original, with the power to change minds and improve lives. They create a vaccine. Or a song. Or a movement to save the Earth.

They create forerunners.

On behalf of The Grable Foundation and Remake Learning, I'm proud to present these 16 innovations that power such exchanges across the United States. Drawn from the cities and regions hosting Remake Learning Days Across America, each reveals the joys, excitements, and mysteries of the learning ecosystems around us. Each reminds us that for all of our advances and technological marvels, it's relationships that nurture children's wonder. And perhaps most importantly for the world's

learners, each points the way toward large-scale change – toward a better future that's within our collective grasp.

Gregg Behr

Executive Director, The Grable Foundation
Co-chair, Remake Learning





Nico Segall Tobon

Foreword from HundrED

In education, we know that lasting change relies heavily on the strength of relationships between people. These relationships form learning ecosystems as communities, which are the bedrock of nurturing children to become healthy adults. Now that this remarkable year of disruption to education is in its last quarter, it is abundantly clear in the midst of uncertainty that cooperation, collaboration, and learning across multiple levels outside of these ecosystems is needed most of all—from policymakers to parents, from businesses to students, all regularly engaging in open two-way dialogue.

With this in mind, we are delighted to continue our partnership with The Grable Foundation and Remake Learning following on from a successful [Spotlight on Pittsburgh](#) in 2019. The Learning Forerunners Across America report expands the ambition and scope of the Pittsburgh Spotlight by focusing on the system-level best practices that foster innovation at scale in 16 trailblazer regions across the United States. The goal is to identify and celebrate one system-wide impactful and scalable innovation from each of the cities. These cities also participate as a host in the [Remake Learning Days Festival](#), which strengthens on the bond between adults and children through nurturing curiosity and learning together. On behalf of HundrED, we're very proud to present this report that exemplifies strong relationships across diverse stakeholders for more equitable access to quality education.

The innovations presented here focus on big-picture, system-level, impactful solutions at scale that are operating across multiple schools and/or institutions. You'll see there are many inspiring examples: from connecting K-12 teachers with innovative science and engineering research in Central Pennsylvania, to giving students the tools to design their own learning in Northeast Ohio. These 16 cities break the structural boundaries of outdated traditional systems in K-12 education, and exemplify partnerships on multiple connecting levels.

These innovations are outstanding examples that exemplify synergistic connections in unique ways.

I think we can all agree that no one individual or organisation can achieve lasting change at scale without outside cooperation and collaboration. The innovations presented in this report are outstanding examples that exemplify synergistic connections in unique ways. As you explore this report, we hope the innovations not only invigorate, but galvanize action, perhaps even to adopt and adapt some in your context. We envision that learning in this way will help further our mission at HundrED to help every child flourish in life, no matter what happens.

Christopher Petrie

Head of Global Research, HundrED





Forerunners Improve Education in Systems

The challenge: At HundrED, we love all kinds of education innovators, from teachers to entrepreneurs and from nonprofits to startups. We believe that impactful and scalable innovations can make change happen. So far we have mostly focused on innovations that scale bottom-up – grassroots practices and solutions that have the potential to work in a range of contexts. However, to make change happen quickly and at scale, we should also be spending time with top-level decision makers. They have the means to achieve quality education for all students. And like the grassroots innovators, they tend to lack the time and connections to share their innovations with like-minded leaders around the globe.

The network: In our first Education Spotlight Forerunner series (which focused on the City of Helsinki), we identified 10 “city-wide innovations” that could be useful in many other cities of the world, both big and small. As a result, we want to create a network of innovative education forerunners who can share innovative practices with each other. We envision a sharing of best innovations between countries, states, cities, or school networks that have a mission to help every child flourish.

Partners

THE GRABLE FOUNDATION

The Grable Foundation believes in possibilities: that a child will experience something new that will change his or her life; that a teacher will have the resources to nurture students; that kids will play and learn and grow on their own time, in their own way, guided by a community of people and places keen to make these possibilities a reality. The Foundation awards support to organizations that improve the lives of children and youth across the Pittsburgh region from early childhood through the formative years, inside the classroom and out. grable.org

REMAKE LEARNING

Remake Learning is a network in southwestern Pennsylvania and northern West Virginia that ignites engaging, relevant, and equitable learning practices in support of young people navigating rapid social and technological change. An open group of interconnected, creative, and innovative people and organizations, Remake Learning is a collective effort to transform teaching and learning to better serve today's young people. remakelearning.org



Ben Filio

HUNDRED

A Finland-based nonprofit, HundrED discovers, researches, and shares inspiring innovations in K-12 education. Its goal is to help improve education and foster a movement through encouraging impactful and scalable innovations to spread, mindful of context, across the world. HundrED Spotlights create unique opportunities for both educational professionals and independent organizers of the Spotlight to gain a thorough insight into the education innovations taking place in either a specific area of education, like literacy or sustainability, or within a certain geographic location, for example, India or London. For each Spotlight, we select the brightest education innovations, which then undergo a thorough study by our Research Team and an expert Advisory Board. HundrED Spotlights are organized with partner organizations, who help from their area of expertise.

HundrED's Mission

INTRODUCTION

The world of education is full of inspiring innovations, yet they struggle to spread beyond their immediate environments. This is why we exist. Our mission is to help every child flourish in life by giving them access to the best possible education innovations.

Since 2016, HundrED has been conducting rigorous research in all continents, selecting 100 inspiring innovations annually and sharing our Global Collections with the world, for free. All of the insights and selected innovations are documented, packaged, and available to global educators through our website and yearbooks.

HundrED Manifesto

The purpose of education is to help every child flourish, no matter what happens in life. In a fast-changing world, focusing on traditional academic skills will remain important, but that is not enough. To thrive as global citizens, children must be equipped with a breadth of skills.

While we are advocates of child-centric approaches and personalized, passion-based learning, the relationship between an inspired teacher and a motivated student will remain essential. Assessment has to be aligned with the core purpose of helping kids flourish, and all of this should be reflected in the learning environment of the future.

To make this happen, we need visionary leadership at every level of our education system and ambitious education innovations; innovative, impactful, and scalable approaches that are effective also in low-resourced environments.

The world of education is full of hardworking specialists who are making this happen every day. At HundrED, we work to give them the recognition and visibility they deserve.

Our goal is to help improve education and inspire a grassroots movement by encouraging pedagogically sound, ambitious innovations to spread across the world.

Theory of Change

1. Identify Innovations

Over 1500 innovations submitted from more than 120 countries
Academy of education experts review and select innovations for all collections

3. Help Innovations Spread

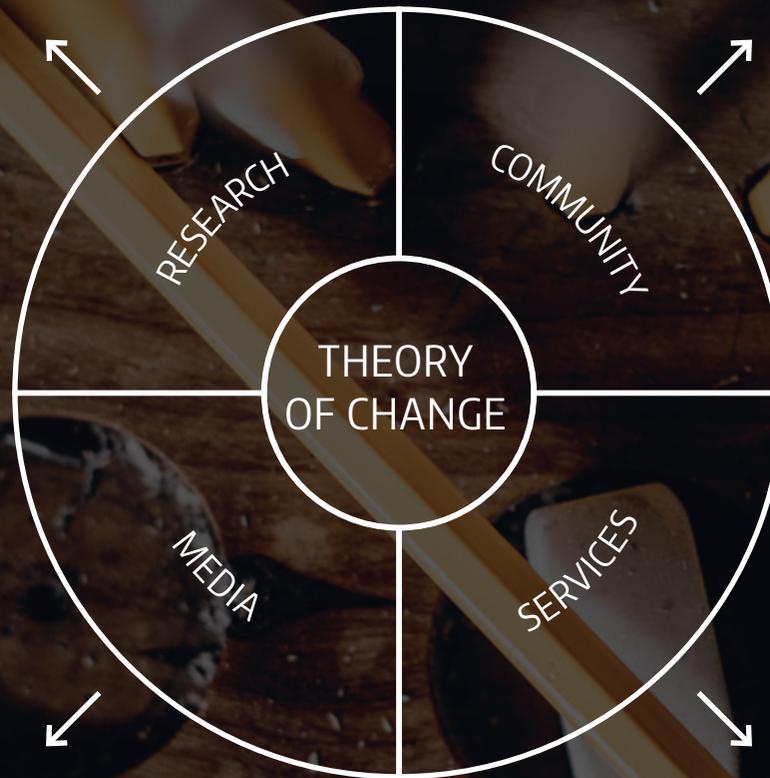
Ambassadors in over 100 countries share innovations locally
We directly connect innovators with growth opportunities

2. Change the Tone

Positive message of change drives 40 000 web visitors per month
Innovation pages have been viewed over 1,3M times

4. Implement at Scale

Combine innovation expertise with system-level needs to create sustainable improvements
Completed various education projects on every continent



Background & Context

I. The Challenge

If it's possible for a single word to describe the modern world, that word might be "connected."

From the foods we eat to the art we consume, we're connected in ways we've never before experienced. Almost every aspect of daily life, from the insignificant to the monumental, stems from this connectedness: An email crosses an ocean on an underwater cable. A song written in one country sparks dancing in another. A virus jumps from a bat to a human being. Connections are conduits for change.

The task of preparing today's learners for the uncertainties and complexities that arise from that change can be daunting. Many of the jobs that await today's young people will likely require work that has yet to be invented. Moreover, the problems that communities face – from hunger to environmental destruction to profound inequity – will not be solved by content knowledge alone. While tried-and-true skills such as reading, writing, and arithmetic will remain essential, developing solutions to complex challenges will require learners who can think critically and work with diverse teams. It will require curious, creative, caring human beings. And it will require learning environments that give every student the nurturing relationships, material support, and inner confidence needed to thrive in a connected, quickly changing world.

Although still the vital center of most children's learning, schools and classrooms cannot achieve this on their own. Schools can be effective, innovative, joyful places for learning, as demonstrated again and again by HundrED's global community. But their inherent limitations make meeting every learner's needs an untenable prospect without external support. There's a reason the saying "It takes a village to raise a child" has become ubiquitous: Adults everywhere are perpetually learning and relearning its truth. And while it might be an ancient proverb, it's also the basis for some very modern ideas about learning.

The problems that communities face will not be solved by content knowledge alone.



Christopher Sprowls



Ben Filio

II. Enter the Ecosystem

“Fewer young people today experience the empowerment of education through conventional schooling alone,” notes a 2019 report by the World Innovation Summit for Education, or WISE. “But when they engage with a range of resources within a broader community, charged with the power of social interaction in the connected world, learners of all ages, temperaments, and aptitudes can seize greater opportunities that better meet their needs.”¹

As a result, cities and regions around the world are leveraging the power of learning ecosystems: networks of schools, nonprofits, businesses, and other organizations that provide additional resources and new ways of learning, both in and beyond traditional schools. An ecosystem’s various parts – perhaps a university on one hand and a dance troupe on the other – combine in different ways to offer young people innovative learning experiences, diverse mentors, and multiple paths to success. They bring the whole village to bear on children’s learning, bridging the gaps between the content taught in schools and the skills that the world requires. As the WISE report puts it, “Education has to become everybody’s business, and the more connected, intertwined, and interdependent societies become, the greater the opportunity to leverage our collective efforts.”

In Pittsburgh, Pennsylvania, one such effort has been underway for more than a decade. Since 2007, [Remake Learning](#) – a network of nearly 600 schools, museums, libraries, laboratories, and others – has convened the region’s educators and



Christopher Sprows

marshaled its assets in service of engaging, equitable, and relevant learning. Across greater Pittsburgh, the network’s members offer diverse and multiplying opportunities to meet children’s individual needs. Learners interested in making and technology, for example, might pick up a [Finch](#) – a locally built robot that’s loaned to school districts for free, teaching kids to code in multiple programming languages. Learners interested in art might turn to the [Manchester Craftsmen’s Guild](#), which recruits world-class teachers of ceramics, photography, and digital arts, offering free afterschool classes to the city’s public-school students. Or they might turn to [The Labs](#), where Pittsburgh’s teens can play an instrument, record a podcast, and make movies with equipment and guidance from the city’s librarians. The possibilities go on and on, and as Remake Learning’s ecosystem grows, so does the number of projects, partnerships, and Pittsburghers prepared for the future.

To date, Remake Learning has engaged thousands of educators, re-imagined hundreds of learning spaces, and earned dozens of awards and accolades. It has been spotlighted in both national and international media, including [Hundred’s 2019 Spotlight on Pittsburgh](#) (the first such spotlight on North America) and [Hundred’s 2020 Global Collection](#). It’s as well-established as any learning ecosystem you’re liable to find. And yet Remake Learning’s staying power derives not from its numbers or its recognitions or even its members or staff. Like any ecosystem, it is sustained by what’s within it – the people who count on it, who care for it, and who demand the best for and from it. It is sustained by the community it serves.

III. Launching Remake Learning Days

Recognizing this, in 2016, the network launched *Remake Learning Days*, imagined as the world's largest open house for the future of teaching and learning. Comprising several hundred free or low-cost events that take place over multiple days, the festival gives families a firsthand look at the innovative approaches to learning that are taking root in their own backyards. With an emphasis on joyful, welcoming, and easily accessible events, *Remake Learning Days* drew more than 30,000 families in its first year. The festival has since become an internationally recognized celebration of learning innovation, earning accolades from the World Economic Forum and others. And it continues to grow each year, attracting tens of thousands of families annually to events that highlight science, outdoor learning, technology, art, youth voice, and more.

The purpose of *Remake Learning Days* is threefold. First, the festival gives parents, caregivers, and families an up-close look at the latest learning innovations, inviting them to experience those innovations themselves. By sitting side-by-side with children in a robotics lab, or by using a 3-D printer for the first time, adults can deepen their understanding of how timeless concepts – problem-solving, perseverance, and relationship-building, just to name a few – are being taught in new ways that are attractive to young people.

Data suggest that the approach is working. According to research released by the Global Family Research Project (formerly the Harvard Family Research Project), the

proportion of participating parents who report being “extremely” or “very” familiar with new ways of learning has climbed by 10 percent since the festival's founding. Meanwhile, the proportion of parents who are “not at all” familiar has fallen to almost zero. Data also show that parents leave *Remake Learning Days* with a greater understanding of the skills and mindsets required to thrive in the digital age.

The festival's second purpose is to equip parents and caregivers with additional tools and resources for supporting their children. By bringing the latest in teaching and learning directly to communities, *Remake Learning Days* introduces parents to the many places they're able to turn as children's interests develop and change. Whether a young person shows an interest in botany or beatmaking, the organizations that host *Remake Learning Days* events can offer guidance, connections, and next steps. Nearly three-quarters of the young people who attend the festival's events report wanting *more* such events, and by inviting parents into the fold, families leave with a better idea of what's available to young people.

The festival's third purpose is to build families' demand for what works. When young people and their parents experience moments of powerful learning with one another, those moments tend to stick. This is how learning innovations become more than passing fads. It's how learning itself is remade. A full 8 in 10 parents leave *Remake Learning Days* seeking similar opportunities throughout the rest of the year.



Ben Filio



Christopher Sprouis

Each innovation has been implemented across at least 10 schools or organizations for a period of one year or longer.

IV. Remake Learning Days Takes Root Across America

Demand for innovative approaches to learning has grown so extensive that in 2019, Remake Learning Days took root beyond greater Pittsburgh for the first time. In April and May of that year, eight additional cities and regions collectively hosted Remake Learning Days Across America: a series of festivals highlighting the learning innovations that are changing lives in Chattanooga, Tennessee; Chicago, Illinois; eastern Kentucky; Knoxville, Tennessee; North Carolina's Research Triangle; northeastern Ohio; southeastern Pennsylvania, and West Virginia. In Chicago, for example, the Chicago Learning Exchange partnered with the mayor's office, public media, and a nonprofit that provides hands-on science experiences to turn the city into an open, dynamic learning laboratory. In eastern Kentucky, a high school partnered with AppHarvest – a high-tech hydroponic company – to give students, teachers, and families alike an up-close look at the future of farming and agriculture. What had long been true in Pittsburgh, it turned out, was also true elsewhere: Ecosystems that leverage their community's strengths can transform teaching and learning at scale.

An estimated 96,000 families attended Remake Learning Days Across America in its first year. After a pause in the spring of 2020 due to the COVID-19 pandemic, Remake Learning Days Across America relaunched as a yearlong campaign, with a slate of events – both in-person and virtual – scheduled for 2020 and 2021. All nine cities and regions have returned, this time along with seven additional sites:

greater Cincinnati; greater Washington, D.C.; Kansas City, Missouri; central Pennsylvania; San Diego County; Oregon; and southern Wisconsin, a region better known as Badgerland. Each of these communities has its own strengths and its own brilliant learners, and each has an ecosystem that – like Remake Learning in Pittsburgh – facilitates innovations in learning at a system-wide level.

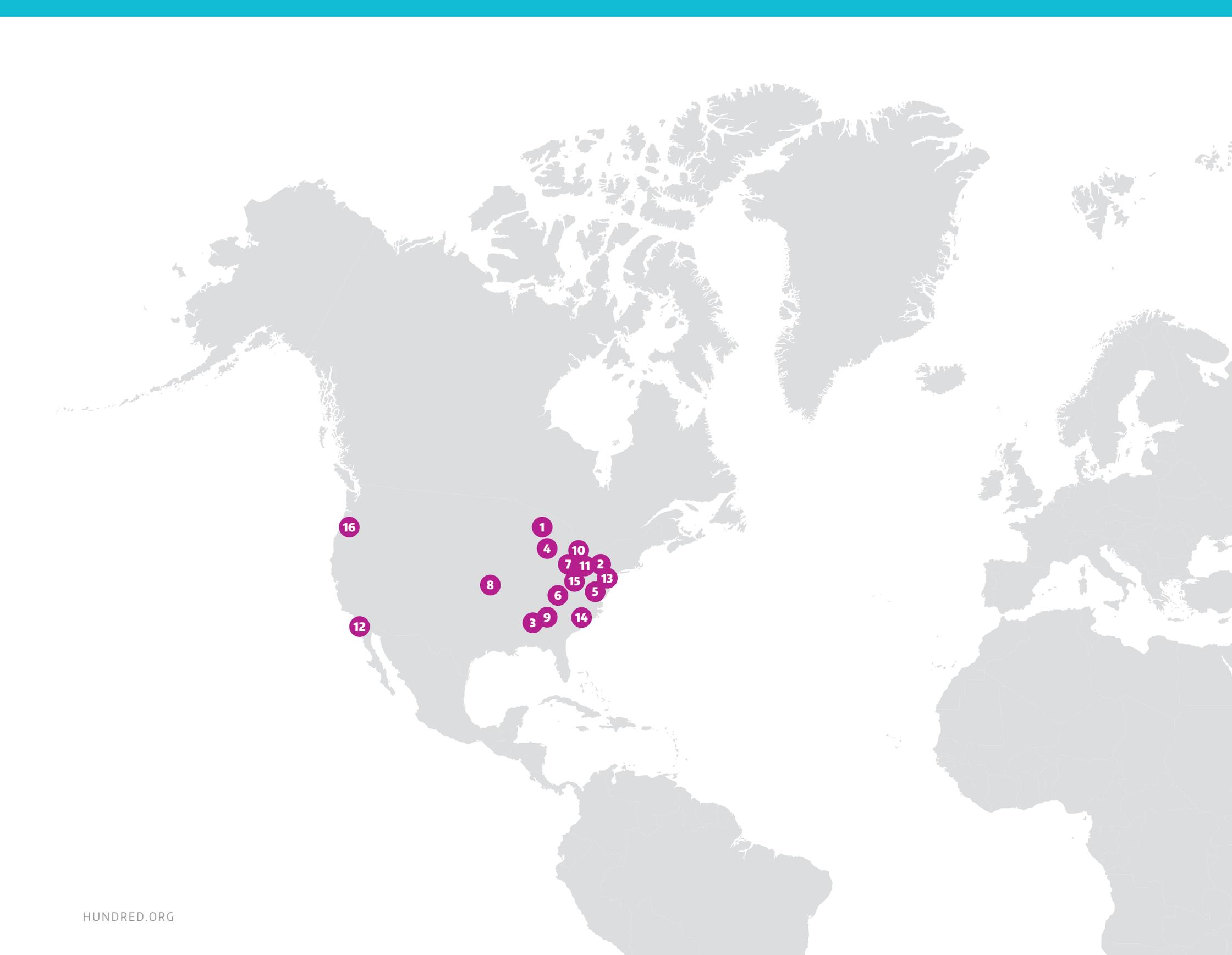
This report surfaces one such innovation from each city or region, selected by Hundred for effectiveness and replicability. Each innovation has been implemented across at least 10 schools or organizations for a period of one year or longer. Each has been evaluated and shown to be beneficial. And each has a contact person who can advise others who are interested in adapting these innovations in cities, countries, and contexts of their own. It is our hope that the 16 innovations highlighted in this report will help set the stage for a global ecosystem: one in which innovators around the world learn from one another, share promising practices, and help every child flourish on this planet that connects us all.

¹ Hannon, Valerie, Louise Thomas, Sarah Ward, and Tom Beresford. "Local Learning Ecosystems: Emerging Models." Innovation Unit, April 30, 2019. <https://www.innovationunit.org/publications/local-learning-ecosystems-emerging-models/>

Innovations

Selected Innovations

1. Wisconsin
2. Central Pennsylvania
3. Chattanooga
4. Chicago
5. D.C.-Maryland-Virginia
6. Eastern Kentucky
7. Greater Cincinnati
8. Kansas City
9. Knoxville
10. Northeast Ohio
11. Southwestern Pennsylvania
12. San Diego
13. Southeastern Pennsylvania
14. North Carolina's Research Triangle
15. West Virginia
16. Oregon





Building blended digital pathways
to knowledge, credentials, and careers.

Wisconsin: LRNG:Badgerland

Wisconsin, United States

Wisconsin – also known as the Badger State – is a network of urban and rural communities in the midwestern United States. Many communities' resources are stretched; as a result, sustaining meaningful educational partnerships in service of students can be a challenge. Communities across Wisconsin are seeking relevant, high-quality educational opportunities that connect students with job opportunities and postsecondary education programs.

LRNG: BADGERLAND

LRNG is a national initiative that grew out of intensive research sponsored by the MacArthur Foundation and other leaders, and now powered by Southern New Hampshire University. WeThinkBig brought the initiative to Wisconsin and partnered with local schools, employers, and organizations to pilot and launch LRNG:Badgerland in 2018. In 2019, the Wisconsin Department of Education joined

to co-host the LRNG:Badgerland network. This network – and the digital badges it provides – serves as “connective tissue” for:

- Teachers looking for efficient ways to make curricula relevant to real-world situations
- Employers looking for meaningful ways to partner with schools and provide opportunity for young people
- Post-secondary programs seeking motivated students prepared for success
- Community leaders looking to leverage their philanthropic investments

The platform's digital badges introduce students to careers in nursing, construction, hospitality, manufacturing, information technology, science, and education. Badges are earned after a student completes a series of assignments (called a “playlist”) and submits evidence of their learning and competencies for each activity. Typically, this evidence is a combination of authentic learning artifacts: a portfolio or collection of new work that the student has created; their own analysis of real-world problems; quiz scores; and more.

Badges can serve as students' entry tickets to either a guaranteed job-shadow experience or an invitation for a job interview. Some badges pre-qualify students for entry into more advanced career program offerings, such as career academies, workshops, and other pre-professional programs. Other badges earn students rewards or incentives such as t-shirts, water bottles, digital devices, tickets to events, and more, in addition to professional or academic recognition. Soon, some badges may even count toward high school or college credits.

LRNG: BADGERLAND'S COMMITMENT

By bringing together stakeholders and students and connecting them to the educational experiences and resources available throughout Wisconsin, LRNG: Badgerland makes educational offerings seamless and available to every student, regardless of their socioeconomic status. The LRNG platform provides career-relevant educational experiences in a format that is engaging, exciting, and accessible for youth, regardless of ZIP code or schedule.

EXAMPLES AND HIGHLIGHTS

There are multiple ways to engage with LRNG:Badgerland. Students can access and explore the platform independently, or the experience can be embedded in the more traditional classroom or afterschool program experience.

For example, high school students with an interest in healthcare can dig deeper and discover available careers in that field via online sources and by connecting with local professional mentors. Activities on the platform include explanatory text and resources to help students familiarize themselves with the profession, identify the mentors they want to meet, and learn etiquette and best practices for making informational interview calls. As students deepen their learning and earn digital badges, the badges can be uploaded to an academic transcript, resume, or career platform, providing evidence of students' knowledge and experience.

Much like a diploma represents an institution's certification that a student has completed and succeeded in attaining a level of academic excellence, digital badges represent a community's certification that the learner has demonstrated a level of mastery and competence in specifically defined academic and career areas. For example, students wishing to job-shadow in a hospital must first demonstrate that they are familiar with the employer, understand conceptual foundations and procedures, and understand and follow privacy and safety protocols. Attainment of the badge pre-qualifies and “opens up” the opportunity to job-shadow, as both learner and employer are now assured that the student has the foundational competencies and confidence required for more sophisticated real-world experiences.

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<http://www.wethinkbig.org/lrngbadgerland/>

<https://www.lrng.org/badgerland>

All
TARGET GROUP

2018
ESTABLISHED

71525
CHILDREN/USERS



The Penn State Center for Science and the Schools bridges relevant STEM research and scientific issues with K-12 education.

Central Pennsylvania: Connecting STEM research and practices to K-12 environments

Central Pennsylvania, United States

If we want to equip today's students to solve tomorrow's problems, we need to equip educators with the tools to spark scientific curiosity. Current reforms in K-12 and post-secondary STEM education ask teachers to adopt the practices of scientists and engineers to teach core disciplinary ideas and crosscutting concepts. However, most science teachers lack opportunities to engage in authentic research experiences. The Penn State Center for Science and the Schools (CSATS) addresses this challenge and helps teachers bring scientific practices to life in their classrooms.

CSATS works with Penn State researchers and their colleagues to develop, implement, assess, and disseminate STEM outreach programs by:

- Collaborating with Penn State researchers and faculty to develop the education components of their research grants
- Creating professional development programs that introduce educators to STEM researchers, who help enhance their curricula to include relevant, meaningful scientific learning experiences for students
- Building partnerships with stakeholders including businesses, libraries, science centers, museums, and others to transform STEM education for the next generation

THE CENTER FOR SCIENCE AND THE SCHOOLS' COMMITMENT

Through this transformative engagement with educators, CSATS has impacted 286 schools across 22 states, bringing meaningful STEM research and experiences to a growing number of students.

EXAMPLES AND HIGHLIGHTS

- Partnering with Dr. Susan Stewart, associate professor in aerospace engineering, CSATS developed workshops for teachers to incorporate sustainability and renewable energy into their curricula by investigating wind energy – the fastest-growing energy resource in the U.S. The workshops give teachers the tools to enable students to apply difficult concepts such as energy conversion, energy transfer, and electricity generation. The workshop also prepares teachers to lead student teams in developing their own wind turbines for the annual KidWind Challenge, in which 4th–12th grade students compete to build the most efficient, functional, and innovative wind turbine.
- With the Center for Pollinator Research, led by Dr. Christina Grosinger, CSATS promotes teachers' and students' understanding of factors that contribute to the decline in pollinator populations. Teachers develop the capacity to incorporate various investigation techniques into their classroom research projects using a place-based approach, helping students understand phenomena and solve problems in their own backyards.
- Through a seven-week, full-time summer research experience, teachers work alongside scientists and engineers to develop a classroom research project that infuses best practices and scientific phenomena. For example: Dr. Sukyoung Lee, professor in meteorology and atmospheric sciences, worked with a rural physics teacher to generate models that investigate relationships between incoming and outgoing radiation on Earth and sea ice cover in the Arctic. Through this in-depth experience, the physics teacher's students had the opportunity to perform authentic scientific research using millions of data points from NASA and professional researchers.

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Teachers

TARGET GROUP

2004

ESTABLISHED

942

CHILDREN/USERS



Teacherpreneur offers teachers support, time, and space to incubate and launch big ideas that impact their students, school, and community.

Chattanooga: Teacherpreneur

Chattanooga, Tennessee, United States

The history of Hamilton County, Tennessee represents the power of a community to come together and affect systemic change. Once a thriving trade and steel hub nestled along the Tennessee River in the foothills of southeastern Tennessee, the region has experienced a resurgence over the past three decades as community leaders pivoted to embrace eco-tourism, attract global manufacturers, and nurture a thriving entrepreneurial ecosystem. This resurgence was also felt in the education system. The Hamilton County region has embraced the idea of practitioner-led innovation, and Teacherpreneur shines as an example of what's possible when teachers are elevated in the community and empowered to lead from their unique experiences and perspectives. Today, Hamilton County Schools is recognized as the home of the largest educational Fab Lab (advanced makerspace) network in the world, and this work is largely led by teachers who have developed and leveraged an entrepreneurial spirit to bring unique learning opportunities to students and their families.

Teacherpreneur is led by the Public Education Foundation in partnership with Hamilton County Schools and the Benwood Foundation. The Public Education Foundation is a non-profit organization that, for more than 30 years, has provided training, research, and resources to teachers, principals, and schools in Hamilton County and surrounding areas. We are innovators, working with a wide range of partners to increase student achievement so all students succeed in learning and in life.

TEACHERPRENEUR'S COMMITMENT

With a focus on providing equitable opportunities for students, Teacherpreneur offers teachers in Hamilton County Schools the support, time, and space to launch ideas that can impact their classroom, school, or community. Teacherpreneur brings teachers, entrepreneurial experts, and community leaders together to launch transformative ideas, growing them into scalable, sustainable solutions. Since launching Teacherpreneur in 2014, the Public Education Foundation has provided wraparound support for more than 175 teachers who have successfully launched 114 initiatives.

To bring these innovative ideas from concept to scale, Teacherpreneur was designed to support teachers as they cultivate an entrepreneurial approach to problem solving. After a competitive selection process, a cohort of Teacherpreneurs (usually 20 to 30 teachers) engage in a six-week start-up incubator planning session designed specifically for teachers. The planning phase concludes with an intensive planning weekend capped by the annual Teacherpreneur Pitch Night, where the teachers make two-minute pitches to a panel of expert judges and an audience of 300+ community members, business leaders, and educators. Pitch Night awards cash prizes to the top three pitches as reward money directly to the winners. Following Pitch Night, the Teacherpreneur steering committee allocates seed money ranging from \$3,000 to \$10,000 (from grant funding provided by the Benwood Foundation) for each project based on the idea's potential for impact and the team's demonstrated capacity to achieve their goals. The teams then spend the next 24 months working with the Public Education Foundation and community mentors to bring their venture to fruition. The Public Education Foundation provides fiscal management, professional support, and consulting services for up to three years for each venture.

Rather than encouraging teachers to launch businesses, Teacherpreneur is designed to empower teachers to leverage an entrepreneurial mindset to address challenges they see from their valuable perspective. In 2019, Teacherpreneur branched into a second lane. Today, Teacherpreneur Incubator provides the services described above, and Teacherpreneur Accelerator supports former Teacherpreneurs to bring their successful initiatives to scale across the region.

EXAMPLES AND HIGHLIGHTS

The first six cohorts of Teacherpreneur developed a wide range of teacher-informed solutions. For example:

- Two elementary teachers realized their students' caregivers needed assistance providing academic support at home, so they retrofitted a school bus to create The Passage, a mobile classroom the Teacherpreneurs use to bring support directly to students and their families.
- A middle school teacher partnered with a high school guidance counselor and an elementary school STEAM lab teacher to launch Gig City Girls – a girls-only coding club that provides coding kits, guided activities, and structure for teachers to launch girls' coding clubs in K-12 schools. Within the first two years of their launch, Gig City Girls supported the successful launch of 20 clubs serving more than 2,500 students!
- A high school math teacher worked through Teacherpreneur to launch Tiny House: Big Impact, a unique mathematics course for high school students that weaves algebra and geometry standards into a semester-long build of a complete, portable tiny house.

Michael Stone

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<https://www.pefinnovationhub.org/>

Teachers

TARGET GROUP

2014

ESTABLISHED

178

CHILDREN/USERS



Connected learning connects young people to additional opportunities, leading to skill-building, civic participation, and deeper learning.

Chicago: From conventional learning to connected learning

Chicago, Illinois, United States

In 1871, the Great Chicago Fire ravaged the City of Chicago, burning it to the ground. From that tragedy, Chicago rebuilt with an eye toward building “big things” and new innovations. Chicago introduced the first elevated train line – now known as the “L” – and established the Chicago Public Library, a free public library system.

Fast forward 150 years, and innovation is still core to Chicago's story. Although it's a lesser-known story, Chicago has played a leading role in hands-on, digital learning that has scaled locally and nationally. More specifically, much of the framework called connected learning originated in Chicago and was first implemented at YOU-media, the Chicago Public Library's digital learning space for teens.

Chicago is now a global city with abundant opportunities to learn. But it's also a tale of two cities, where abundance is not equitably distributed and learning experiences aren't always grounded in young people's interests or connected to further opportunity.

CHICAGO LEARNING EXCHANGE (CLX)

Connected learning provides a foundation for much of the Chicago Learning Exchange's (CLX) work and is based on more than a decade of research into the factors that lead to deeper engagement among youth, regardless of their socio-economic background. CLX created a Connected Learning Guide that translates research into an easy-to-use reference for educators, mentors, and other youth-serving professionals. The guide has been the template for organizations in Chicago and across the nation.

CHICAGO LEARNING EXCHANGE (CLX)'S COMMITMENT

CLX practices connected learning by fostering connective tissue among organizations to share, collaborate, and exchange resources and best practices. The community aspect of connected learning is pivotal – there is no connectivity without sharing. Connecting educators across disciplines and institutions enables a more holistic array of opportunities for all children.

EXAMPLES AND HIGHLIGHTS

- Through its Community Impact Experience, CLX community member Civitas Education Partners inspires, challenges, and prepares students to impact their communities and the world as consultants, designers, problem solvers, critical thinkers, and innovators. Students from two different charter high schools are given the opportunity to commute off-campus to a coworking space to work collaboratively and use their own interests and passions to solve challenges pitched by community organizations, businesses, or student ventures. Students earn work experience and high school credits in statistics, English, and global studies as part of the program through their project-based, connected learning.
- YOUmedia is a 21st-century teen digital learning space at 23 Chicago Public Library locations, with 30 expected by the end of 2020. With an emphasis on digital media and the maker movement, teens engage in projects across

a variety of core content areas, including graphic design, photography, video and music production, 2D/3D design, STEM, and hands-on making with the support of skilled mentors. All YOUmedia locations have laptops, cameras, music and gaming equipment, 3D printers, vinyl cutters, and more. It's an open environment where youth choose what they want to do, and library staff provide mentoring and coaching as well as connection to experts. A node on a teen's pathway to lifelong learning, YOUmedia connects teens to other learning opportunities, leading to skill-building as well as college and career development. The concept has been adopted in the US and beyond.

- The underlying research, conceptualization and creation of YOUmedia was created by Digital Youth Network and funded by the John D. and Catherine T. MacArthur Foundation, which in 2004 set out to develop new approaches to pedagogy and instruction in the context of networked media environments that were rapidly changing how information was created, disseminated, remixed, and reinvented.

Civitas Community Impact Experience

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All
TARGET GROUP

2005
ESTABLISHED

75 000
CHILDREN/USERS



Inspired by the world-renowned municipal preschools in Reggio Emilia, Italy, Children Are Citizens fosters civic agency in young learners.

D.C.-Maryland-Virginia: Promoting civic agency in the early years

Greater Washington, D.C., United States

The Washington, D.C., metropolitan area – namely, the nation’s capital and surrounding suburbs in Northern Virginia and Maryland – comprises some of the most affluent and most impoverished neighborhoods in the country. Divides exist along many lines: socioeconomic, racial, linguistic, cultural, and more. While local governments have attempted to raise the quality of life for all, including providing universal early childhood education starting at age 3 in D.C., these divides have persisted. The quality of schools overall – and of early childhood education in particular

– varies greatly across the region. Questions that have no easy answers serve as a reminder that we have much more work to do in order to create a just and equitable world for everyone – work that includes high-quality education for every child.

CHILDREN ARE CITIZENS

Children Are Citizens grew out of a larger network of educators called D.C.-Project Zero, or DCPZ. Begun in 2012, DCPZ is made up of more than 2,200 local educators in the Washington, D.C., region who are interested in exploring pedagogical frameworks, tools, and strategies developed at Project Zero, a research group located at the Harvard University Graduate School of Education. Under the auspices of the Professional Development Collaborative at Washington International School, DCPZ offers a free, open-to-all professional development workshop series during the academic year; hosts a week-long summer institute for local educators; and organizes a number of grant-funded professional development projects, including Children Are Citizens, that focus on specialized research from Project Zero.

All of these initiatives aim to bring together educators from varied sectors (traditional public, public charter, independent, and religiously-affiliated schools, as well as early childhood centers and informal learning spaces such as museums) to explore and practice Project Zero ideas.

For Children Are Citizens, early childhood and early elementary school teachers partner with local cultural institutions as a way to develop and enrich a curriculum focused on children's ideas about making their city a better place. The teachers attend professional development seminars throughout the year focused on supporting their projects. They document student thinking and learning, refine their questioning and listening skills, and bring children's work to the seminars to discuss with their peers. The project also provides them with a mentor, who visits their classroom and supports their development.

CHILDREN ARE CITIZENS' COMMITMENT

Most of the Children Are Citizens classrooms have been in schools that serve a majority of children coming from impoverished circumstances. The project also has supported classrooms with a high percentage of children with special learning needs. Premised on the idea that all children have theories about their city and can contribute to making it better, Children Are Citizens provides the structure and support system that enables teachers to enact a child-centered curriculum and to

share the outcomes with colleagues and families in the form of an annual exhibition and a published book. Children Are Citizens highlights the rich diversity of families, lived experiences, and ideas in the greater Washington, D.C., area.

EXAMPLES AND HIGHLIGHTS

Early childhood classrooms taking part in Children Are Citizens have embarked on varied projects that aim to make their communities a better place, such as “spreading happiness” to strangers they encounter; petitioning to have a tree replaced near their school; and developing and enacting plans to reduce, reuse, and recycle at school and home. Others have explored people and places in their neighborhood in order to build community bonds. For example, one group of three-year-olds in a bilingual classroom explored the “little libraries” around their school and created imaginative stories around them. Another group of young learners became fascinated by the new tramway system in their part of town and created a guide for other children that highlighted what might interest them along each stop. For another project, several classes across different grade levels in one school researched a mural in their neighborhood that featured three famous historical figures, along the way meeting with the mural's creator, learning about the historical figures' accomplishments, and setting aspirations for themselves.

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<http://www.pdcollaborative.org/>

All
TARGET GROUP

2014
ESTABLISHED

1000
CHILDREN/USERS



The Entrepreneurial Coal Lands Redevelopment Program encourages high school students to reimagine land use for entrepreneurial purposes.

Eastern Kentucky: Re-envisioning community spaces

Eastern Kentucky, United States

Eastern Kentucky has been a leader in the coal industry for decades. As the main industry for the region, many jobs have traditionally been available for residents. Over the past decade, however, the coal industry has been in decline, causing the unemployment rate to drastically increase. Programs such as the Entrepreneurial Coal Lands Redevelopment Program (ECLRP) allow students to learn about entrepreneurship and job creation while repurposing land left behind from mining operations.

Now in its fourth year, ECLRP engages school districts, local universities, and community and technical colleges. Mentors from higher education are made available

for students, as is an environmental scientist from Kentucky's Division of Mine Reclamation and Enforcement. Bit Source, a local software development company, also assists by creating online training modules for teams and coaches, as well as hosting in-person workshops that help students develop environmental plans, business plans, 3D models, and business pitches.

The region's economic development organization, Shaping Our Appalachian Region, has also provided support for the program. Involvement from these varied entities allows students to work with adult mentors who guide their learning, making it much more authentic.

THE ENTREPRENEURIAL COAL LANDS REDEVELOPMENT PROGRAM'S COMMITMENT

ECLRP is a program promoted by CEDAR, Inc., a nonprofit partnership among the coal industry, the business community, and academia. Working collaboratively with school districts and others, CEDAR has pivoted its educational focus from one of coal education to one of economic development education. Students appreciate the role that coal played in the past while looking ahead to the innovations of the future. Whether students are identifying a greenfield, greyfield, brownfield, arable land, or a reclaimed surface mine, the approach to learning remains the same: Students are most engaged when identifying problems in their own communities and creating innovative, meaningful solutions.

EXAMPLES AND HIGHLIGHTS

The most impactful aspect of the project is working to reinvent a land space that is close to students' homes. Much of the available land in eastern Kentucky was formerly used in coal production. Giving students the opportunity to get outside of the classroom and into the community is one of the highlights of this innovation. Students have re-imagined local land to be more beneficial to their communities, developing business plans, prototypes, and models for solar farms, hemp farms, a honeybee farm, "primitive camping" and recreational sites, natural water purification systems, rehabilitation centers for veterans, bottled-water businesses, and more.

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14–18

AGE GROUP

2017

ESTABLISHED

115

CHILDREN/USERS



Exploring the future of learning today is an act of stewardship for our future communities and the young people who will live in them.

Greater Cincinnati: Leveraging strategic foresight to guide today's education systems

Cincinnati, Ohio, United States

The world around us is evolving and shifting. We are experiencing exponential advances in digital technologies that will require us to redefine our relationships with one another, with our institutions, and even with ourselves. The political, economic, and societal structures in which we live affect every facet of our lives, including how we experience teaching and learning.

Based in Cincinnati, Ohio, KnowledgeWorks helps education leaders, influencers, and innovators make sense of change and take informed action today. One way we do this is by creating customized forecasts about the future of learning that can help educators understand changing landscapes and imagine future possibilities.

KnowledgeWorks' forecasts on the future of learning identify key drivers of change that will impact education over the next decade and imagine what those drivers of change could mean for learning. These major societal shifts are grounded in trends, patterns, plans, and developments that are taking place today. Accompanying each driver of change, we share questions to prompt reflection on its impacts. We also share signals of change, which are present-day programs, practices, and initiatives that show glimpses of what future education landscapes could look like.

KNOWLEDGEWORKS' COMMITMENT

KnowledgeWorks is a national nonprofit advancing a future of learning that ensures each student graduates ready for what's next. For 20 years, we've been partnering with states, communities, and leaders across the country to imagine, build, and sustain vibrant learning communities. Through evidence-based practices and a commitment to equitable outcomes, we're creating the future of learning, together.

EXAMPLES AND HIGHLIGHTS

What might the education landscape look like in ten years? By asking that question, we can anticipate change, explore strategic possibilities, and identify ways of creating better opportunities for all learners. That's why KnowledgeWorks has been publishing forecasts on the future of learning since 2006, with each made freely available to the public.

Our forecasts have guided strategic planning conversations across a wide variety of organizations, helped philanthropic organizations inform their work, assisted communities in thinking broadly about what COVID-19 responses might look like, and informed "Portraits of a Graduate" at the state, district, and school levels, including Marion City Schools in Marion, Ohio. These portraits represent a vision for the skills, knowledge, and dispositions a student needs to succeed in college, career, and life.

Our forecasts have also helped districts grapple with such issues as digital natives and how schools might partner with technologically savvy students; how increasingly available data could inform decisions around education and supports; and how participatory media might engage educators and learners in global civic discourses, forums, and activities. By engaging in these future-thinking conversations, we have helped a wide range of organizations and individuals navigate change, imagining what they want for the future and considering how they might begin creating the future of learning today.

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Leaders
TARGET GROUP

2000
ESTABLISHED

450 000
CHILDREN/USERS



A collaborative of businesses and educators that connects students with industry pros to solve relevant, real-world problems.

Senior Capstone Innovation Experience

Kansas City, Missouri, United States

Kansas City's key industries – from global design to health science and advanced manufacturing – fall squarely into the world of STEM. The region's emergence as a thriving hub for tech, entrepreneurship, innovation, and the arts make it a natural hotspot for incubating new approaches to STEM education.

KC STEM ALLIANCE

Moving students from academic exercises to an authentic, career-oriented experience requires consistent connections with professionals in the workplace. That's why the KC STEM Alliance's Senior Capstone Innovation Experience strategy builds a shared framework to connect high school seniors with professionals in science, technology, and engineering at multiple points throughout the academic year. These touchpoints broaden students' outlook, enhance their work, and provide real-world feedback.

KC STEM ALLIANCE'S COMMITMENT

Since 2015, industry professionals have invested an estimated 2,500+ volunteer hours to inform the work of nearly 2,400 students from 50 schools. Teachers report that the community of peers and professionals created through the KC STEM Alliance and its capstone program creates meaningful connections for themselves and their students. Industry partners report the shared framework helps strategically align their philanthropic, workforce development, and education initiatives. And perhaps most importantly, students report that the experience helps guide their decisions about what's next in their lives, with 86 percent reporting plans to pursue STEM degrees and 90 percent reporting that this program reinforced that decision.

EXAMPLES AND HIGHLIGHTS

The Senior Capstone Innovation Experience starts early in the academic year with workshops for students enrolled in capstone courses in engineering and biomedical science through Project Lead The Way, a project-based STEM education curriculum for P-12 students. Each workshop convenes multiple schools to provide a larger professional experience for students, and each includes a keynote speaker and small breakout groups where students refine their project ideas with mentors from related fields. A round robin format introduces students to mentors from a variety of disciplines, building their social capital. Students still searching for project ideas brainstorm with mentors from Kansas City's entrepreneurial community.

Students choose to address an array of problems, from improving gear they use in daily life (such as backpacks and athletic equipment) to larger issues such as disease detection, clean water, and homelessness. Students and their teachers leave the workshop with a list of mentors they can tap throughout the project.

To motivate students as they work through their projects, scholarship competitions reward exemplary work in design, research, and innovative problem solving. Rigorous judging by professionals provides project validation while engaging industry mentors and post-secondary partners. Innovator Awards, which recognize projects for innovation and market potential, actively engage Kansas City's startup community and introduce students to the exciting world of entrepreneurship.

A spring showcase brings hundreds of students together in a festive, regional event to celebrate their work with mentors, the business community, post-secondary institutions, family, and friends. The event bridges education and industry by bringing the curriculum to life as students share their solutions. Winning projects in the 2020 competition ranged from early detection of ectopic pregnancies to a modified kitchen utensil that uses ultraviolet light to detect salmonella in eggs.

Students passionate about their projects then receive invitations to an in-depth workshop where they can pitch their ideas to business mentors and learn about the entrepreneurial mindset. This mindset includes the ability to think of problems as a set of challenges to solve; the acceptance of failure as part of the learning process, and a drive for continuous improvement — characteristics that will serve young people well regardless of their chosen career path.

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All
TARGET GROUP

2011
ESTABLISHED

2500
CHILDREN/USERS



The Tennessee College of Applied Technology eliminates barriers to jobs through career-aligned courses, credentials, and connections.

Knoxville: Building a path between “high school” and “hired”

Knoxville, Tennessee, United States

Many youth in Knoxville leave high school without clear postsecondary plans, leading some to fall through the cracks. This is the gap that the Tennessee College of Applied Technology (TCAT) works to bridge for the Knoxville region.

TCAT Knoxville takes a holistic view of workforce development, viewing itself as a conduit for individuals to reach their educational, career, and life goals. TCAT does this by developing long-term partnerships with local, regional, and national stakeholders so that K-12 and college students can connect with employers and gain insights into high-demand occupations. As students explore opportunities and possibilities, TCAT guides them to relevant training that helps them explore their own potential and find employment in their desired fields.

TENNESSEE COLLEGE OF APPLIED TECHNOLOGY

The Tennessee Colleges of Applied Technology serve as the premier suppliers of workforce development throughout the state of Tennessee. With 27 campuses across the state and eight locations in eastern Tennessee, the institution serves as a critical link between the Knoxville region's K-12 schools and its workforce. By providing access to region-specific skills, credentials, and connections, TCAT removes barriers to employment for young people and contributes to the economic well-being of students, their families, and communities alike.

TENNESSEE COLLEGE OF APPLIED TECHNOLOGY'S COMMITMENT

TCAT Knoxville is committed to meeting every student where they are and aligning students' learning with where they want to go. The institution partners with both K-12 teachers and local employers to help students build clear, stackable credentials leading them from school to the workforce. By partnering with 25 secondary schools throughout the region to offer dual enrollment, TCAT ensures that students seeking employment can begin acquiring credits, work skills, and experience as early as possible.

EXAMPLES AND HIGHLIGHTS

At its core, TCAT Knoxville provides its students with access: Access to courses informed by K-12 educators and local employers; to credentials desired by industry partners; and to connections with like-minded learners and prospective employers.

TCAT Knoxville offers courses informed by advisory committees, which include K-12 teachers with a grasp of where students are and engaged employers who understand where students need to be. This ensures that courses are both relevant to students and aligned to the needs of the Knoxville region's workforce. Every year, the advisory committees review the curriculum for each program, updating it to keep up with students' interests and the changing demands of the region's employment landscape.

TCAT Knoxville offers credentials backed by national organizations such as the National Coalition of Certification Centers, ensuring that the students who earn them can land well-paying jobs wherever they happen to be. TCAT offers certifications for several steady, in-demand industries such as transportation, energy, and manufacturing, maximizing students' opportunities and providing them with relevant, transferable skills.

Just as importantly, TCAT Knoxville offers connections to employers and like-minded learners at both the local and national levels. All TCAT students, for example, are given memberships to SkillsUSA, a partnership of more than 430,000 students, teachers, and industry leaders who connect through events, competitions, and more. Every year, TCAT Knoxville brings more than 100 high school student members to campus for SkillsUSA's regional work skills competition. TCAT's instructors and staff serve as judges and contest coordinators, helping high school students understand the many potential paths to the workforce. These partnerships have been extraordinarily successful: TCAT Knoxville's SkillsUSA chapter has won 114 gold, 66 silver, and 71 bronze medals at its annual state conference since 2007. In the same time frame, TCAT Knoxville's chapter has won 30 gold, 10 silver, and 7 bronze medals at the national competition.

The result of all this is high-quality career opportunities for students. These employment opportunities come as soon as students attain their industry-backed credential. TCAT Knoxville boasts a 93 percent placement rate after graduation.

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15-18

AGE GROUP

1968

ESTABLISHED

574

CHILDREN/USERS



By harnessing community resources, the NeoSTEM Ecosystem gives students the tools to design their own learning.

Northeast Ohio: Empowering students to design active learning experiences

Northeast Ohio, United States

Northeast Ohio is a place of amazing opportunity and difficult challenges. Its history as a once-mighty industrial center is a complicated legacy. Some towns across the region – which spans from Cleveland to Akron to Youngstown – have rebounded from years of industrial disinvestment, while others still face profound economic challenges.

THE NEOSTEM ECOSYSTEM

With its network of partners ranging from library systems to after-school clubs to school districts, the NeoSTEM Ecosystem works to create meaningful STEM learning opportunities, empowering the next generation of knowledge creators.

NeoSTEM's programs include WIR'ED, which links students with marketing professionals to support local businesses and improve their online presence; the DigiRacer, an autonomous, student-built soap box derby vehicle; and Dancing with the Coding Bees, an interdisciplinary project in which students learn to code by studying dance and the movement of bees. For each of these programs, there is no set textbook or set of instructions. Instead, with guidance from NeoSTEM's members, students design their own learning experiences and determine the outcome of each project.

THE NEOSTEM ECOSYSTEM'S COMMITMENT

The NeoSTEM Ecosystem is committed to fostering collaborations that lead to inclusive, relevant, active learning. NeoSTEM seeks to create more meaningful STEM learning opportunities for all that result in better educational engagement, improved graduation rates, and alignment among all sectors of the economy.

EXAMPLES AND HIGHLIGHTS

- WIR'ED was created as a pilot of the NeoSTEM Ecosystem for many purposes, including the replicable demonstration of placing students as teachers and coaches for key members of their communities. The pilot pairs students with business owners and marketing professionals to solve challenges that face business owners operating in an online environment. Students help business owners improve their online operations, while students gain important real-world experience and confidence as collaborators. By placing students in the positions of teachers and coaches, communities come to see students as knowledge creators and contributors.
- The DigiRacer combines the time-honored tradition of the Soap Box Derby – where children build and race miniature cars – with the new technology of autonomous vehicles. The Soap Box Derby originated in Akron, Ohio, and students throughout the region now breathe new life into the idea by building self-driving cars, learning science and engineering principles along the way. The project is being realized in a variety of different settings, including traditional classrooms, after-school clubs, and in individual homes where families work on coding and building the cars together. In some cases, students work in teams to build one car; in others, the car is an individualized program where students build cars on their own.
- Dancing with the Coding Bees integrates the arts with coding and biomimicry. By using Scratch – a student-friendly coding program – and studying dance movements, students code a dance to mimic a swarm of bees moving to specific regions. Each group creates a program in Scratch to decipher these dance movements, learning programming techniques in the process. The program has operated in after-school settings throughout the region, with students working in groups to learn coding and to study bees and movement together.

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All
TARGET GROUP

2014
ESTABLISHED

50 000
CHILDREN/USERS



“The Fred Method” is Pittsburgh’s way of doing what Fred Rogers did: Connecting timeless ideas with new ways of learning.

Southwestern Pennsylvania: The Fred Method

Greater Pittsburgh, Pennsylvania,
United States

Southwestern Pennsylvania has always been a place where what’s new converges with what’s timeless. Not far from Pittsburgh – the city that produced such modern innovations as the polio vaccine and the autonomous vehicle – stands the Meadowcroft Rockshelter, the site of the oldest known human presence in North America. This contrast has served as a background for the region’s many reinventions, from its former prominence as a manufacturing hotspot (when it combined 20th-century industry with eons-old natural resources) to its current status as a robotics and healthcare hub. At each stage of its evolution, the region’s best achievements have stemmed from successfully connecting the novel and the perennial.

Nowhere were these connections more apparent than in Mister Rogers' Neighborhood, a program produced in Pittsburgh by a minister, musician, and child-development expert named Fred Rogers. Broadcast nationally from 1968 until 2001, the Neighborhood took what was then a brand-new technology – television – and used it to support children's learning and development. Working with top researchers, educators, and counselors, Fred brought the latest learning science directly to children, delivering it through music, puppetry, documentary films, operas, and special guests who enchanted the program's audience. The Neighborhood combined cutting-edge science, technology, and art with what's timeless and classic about being a kid: creativity, play, and close human relationships.

It was a kind of learning that might loosely be called "The Fred Method."

THE FRED METHOD

Though the Neighborhood's final episode aired two decades ago, "The Fred Method" remains widely used throughout southwestern Pennsylvania. Today, Remake Learning – a network of more than 600 school districts, universities, museums, nonprofits, and other organizations – ignites engaging, relevant, equitable learning opportunities that are simultaneously attractive to kids and attentive to their needs as human beings.

SOUTHWESTERN PENNSYLVANIA'S COMMITMENT

When learning is engaging, learners have the time, resources, support, and encouragement to be active problem-solvers, creators, innovators, advocates, and citizens. When it's relevant, it resonates with a learner's interests, culture, context, and experiences. And when it's equitable, it directs resources and opportunities to the places and people who have been under-served. In southwestern Pennsylvania, Remake Learning works alongside and supports young people and families, particularly learners in poverty, learners of color, learners in rural areas, girls in STEM, and learners with disabilities.

EXAMPLES AND HIGHLIGHTS

Working in schools, early learning centers, libraries, out-of-school programs, and all the other places where young people learn, the network's members bring new kinds of learning directly to kids and families, wherever they happen to be. Members do this in countless ways: In southwestern Pennsylvania, a museum isn't just a museum – it's a place where kids make art, puppets, and artifacts of their own, using the same materials and tools as professional artists. Classrooms aren't just classrooms – in one district, they're partnerships between K-12 educators and university-level learning scientists. In another, they're part summer school and part summer camp, with content instruction in the morning and clay-making, dancing, coding, and kayaking in the afternoon. Meanwhile, Remake Learning itself supports more than just learning: In response to COVID-19, network members formed a coalition of caregivers, social workers, food distributors, tutors, and others to meet the educational, physical, and social needs of children and families.

The result is a region where young people find multiple ways to discover and develop their interests, passions, and joys. And with the help of caring adults and expert professionals, they find opportunities to explore their own potential. That's the aim of Remake Learning Days, a multi-day festival that celebrates the future of learning alongside parents, caregivers, and families. Whether it's remote learning, maker learning, STEM, STEAM, or something else entirely, behind it all is the blending of new ways of learning with what's always been essential for children: safe, nurturing environments and healthy, supportive relationships.

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All
TARGET GROUP

2007
ESTABLISHED

100 000
CHILDREN/USERS

Teens Can Build a Better World



Pactful is a social good innovation tool for teens and teachers who want to build a better world by creating solutions to global problems.

San Diego: Pactful

San Diego, California, United States

San Diego is a thriving city known for its tourism, military and defense industries, international trade, and wireless cellular technology. Having a strong educational system led the city to be ranked among the nation's top ten most-educated cities, according to the U.S. census. Innovation is at the forefront of San Diego's culture and can be seen throughout the region in the form of a STEM Ecosystem, several innovation hubs, and leading biotechnology firms. With its diverse population, topics of equality, inclusivity, and accessibility are at the helm of citywide initiatives and movements.

PACTFUL

Created by the Jacobs Institute for Innovation in Education at the University of San Diego, with the sponsorship of Dr. Irwin and Joan Jacobs, Pactful is a free, virtual, social good innovation method for teachers and teenagers who want to build a better world. Pactful is currently being implemented by educators in over 24 states. It was designed to recapture "Lost Einsteins" and empower learners, ed-

ucators, and communities to innovate from within. Research shows the chances of becoming an innovator depends on several variables: where you live, your race, your gender, and your socio-economic level. Pactful empowers learners to build a better world in their own communities and beyond by providing the right context, support, and tools.

Pactful supports educators and students in the following ways:

- Learners have access to a free design thinking curriculum that supports making a positive impact in their local communities and the world
- A showcase of filterable solutions aligned to the United Nations' Sustainable Development Goals is accessible to users for progress monitoring
- A community of educators using Pactful exists for networking and support
- Challenge events and teacher camps provide important opportunities to be a part of something larger

PACTFUL'S COMMITMENT

The Jacobs Institute for Innovation in Education is a research and development institute powering K–20 inclusive innovation. Our mission fosters inclusion, diversity, and social justice in education. Working across the spectrum of educational innovation, our work supports research and evaluation of educational innovation initiatives, development of new technologies including Pactful, curriculum and pedagogical models, and support for educational organizations to sustain and scale their initiatives. Our team of experts engage in pioneering research and evaluation, develop innovative curriculum and technologies, and support professional learning grounded in the learning sciences.

EXAMPLES AND HIGHLIGHTS

One unique Pactful solution, Go-Green Food Bags, was created by a team of 9th grade teenagers and aligned with United Nations Sustainable Development Goal #12: Responsible Consumption and Production. Their research identified that out of the 300 million tons of plastic produced annually, 50 percent of it is manufactured for single-use purposes. By lowering the amount of plastic waste, people will be able to protect wildlife, clean the ocean, minimize global warming, and reduce carbon footprints. This team believes that people can help better the Earth by changing one small thing in their lifestyle: using eco-friendly Go-Green Food Bags, which are hand-made, reusable, 100 percent eco-friendly, and made from recycled materials.

Another example of an innovative solution, Idle Reminder, was created by a team of 10th graders and aligned with Sustainable Development Goal #11: Sustainable Cities and Communities. Idle Reminder is an alert system for transportation service vehicles, indicating excessive greenhouse gas emissions, which usually occurs in idling buses. Greenhouse gas emissions cause climate change and global warming. By addressing this issue, students plan to improve air quality and slow the impacts of increased temperatures and rising sea levels, making cities more sustainable.

Pactful embodies the San Diego region's goal of inclusive innovation by:

- Offering an entirely digital curriculum and virtual events to minimize accessibility limitations
- Supporting educational equity by providing an educational tool at no-cost
- Establishing a network of educators in our online Pactful community forum
- Conducting Pactful Changemaker Challenge Competitions with students across the world
- Promoting diversity and inclusive practices by expanding access to research and competition opportunities
- Inspiring social good innovation in teenagers by creating solutions to local and global issues

This innovation in San Diego has sparked the attention of educators, schools, and districts across the United States and the world, including Aruba, the United Kingdom, and Hong Kong.

The Pactful Team

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13–18
AGE GROUP

2019
ESTABLISHED

900
CHILDREN/USERS



Riverbend teaches science, sustainability, and environmental stewardship to students and teachers through nature-based learning.

Southeastern Pennsylvania: Building environmental literacy through nature-based STEM learning

Southeastern Pennsylvania, United States

In southeastern Pennsylvania and around the world, there is a renewed sense of urgency regarding environmental issues that goes beyond wildlife and nature. We are facing threats to public health, public education, the economy, and the environment, compounded by complex social and racial justice issues. Teachers are at the forefront of preparing students to deal with these issues, but many education

preparation programs have not kept pace with advances in climate science and the scientific consensus around it. Partnerships like those fostered through STEM ecosystems bring real-world experts and innovative pedagogical practices to schools, preparing students to face complex environmental challenges.

RIVERBEND

Founded in 1974, Riverbend Environmental Education Center has been providing environmental education for almost 50 years. Housed on a 30-acre nature preserve along the Schuylkill River near Philadelphia, Riverbend reaches tens of thousands of learners and educators in schools throughout the region. Its nature-based STEM programs are designed to build environmental literacy by helping learners in southeastern Pennsylvania access and appreciate the natural world and their place in it, ensuring healthy communities and protecting the systems that sustain the region.

RIVERBEND'S COMMITMENT

Riverbend believes that all children deserve excellent environmental education. Connecting children to nature is a vital part of their well-being, and environmental literacy is essential for stewarding the ecosystems that allow healthy communities to thrive. Through collaboration and partnerships with other organizations, Riverbend has expanded its programming well beyond its home on the Schuylkill River, reaching children who have been under-served and whose communities are most affected by the region's environmental challenges.

Riverbend partners with the Philadelphia STEM Ecosystem and the PA SEED Ecosystem to support and share relevant innovations with intermediaries, such as intermediate units and STEM administrators.

EXAMPLES AND HIGHLIGHTS

Riverbend's Philadelphia Children Access Nature program engages teachers and students in an interactive aquaponics curriculum that integrates aquaculture (raising fish in a controlled environment) and hydroponics (growing plants without soil). By building and maintaining these systems in their classrooms, students gain an understanding of ecosystems, environmental challenges, and STEM topics. They also gain firsthand experience with sustainable agriculture – a field that's increasingly critical as the world's population climbs and extreme weather events become more common.

The Philadelphia Children Access Nature program provides classroom equipment needed to build and maintain an ecosystem; comprehensive professional development for teachers; ongoing technical support; field trips to Riverbend's state-of-the-art greenhouse; and more. Throughout the program, students practice science skills by developing investigable questions, collecting and analyzing data, and communicating science content. They develop 21st-century skills such as collaboration and problem solving, and they think critically about how community and societal goals can be met using sustainable agricultural practices and equitable food systems.

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<https://riverbendeec.org/>

All
TARGET GROUP

1974
ESTABLISHED

21000
CHILDREN/USERS



Initiatives in North Carolina's Research Triangle bring expertise and passion for STEM out of labs and into classrooms.

North Carolina's Research Triangle: Bringing real science into the classroom

Raleigh-Durham-Chapel Hill, North Carolina, United States

The Research Triangle is, as the name implies, a place of science. The Triangle is a region of North Carolina anchored by three major research universities; the largest research park in the United States; the cities of Raleigh and Durham; and the town of Chapel Hill. It is renowned for biotechnology, world class healthcare infrastructure, several historically Black colleges and universities, numerous corporate and government research labs, and three major science centers committed to engaging the public in inclusive ways.

Despite the wealth of research and a culture of innovation in the region, K-12 school systems face challenges of equity, accessibility, and poverty. Durham County in particular remains a place of stark contrasts. Nearly 20 percent of county residents speak a language other than English at home, and less than half are homeowners. According to Durham's Partnership for Children, approximately 28 percent of Durham County's children live in poverty, higher than state and national averages. This disparity persists across the Triangle, contributing to the notion that there are "two Triangles" – one where kids are given the opportunity to explore science and STEM careers, and one where kids are not.

BRINGING REAL SCIENCE INTO THE CLASSROOM

The region's STEM experts and educators have created a web of science interaction and learning: STEM companies, universities, and research institutions reach out to schools; science centers connect STEM professionals to students; and public school systems reach out to local STEM professionals to bring real, relevant science to their students.

Initially, many efforts overlapped, headed by disparate institutions with related missions. Over the last decade, however, overarching initiatives like the Triangle Learning Network and the North Carolina Science Festival have helped organizations combine their efforts and make opportunities more visible and replicable year after year.

THE TRIANGLE REGION'S COMMITMENT

The entrepreneurial climate of the Triangle has led to an eagerness among institutions and schools to bring the successes of the business and research world into the classroom, inspiring the diverse students of the region. Real science done by local scientists makes the subject matter relevant to students and more effectively connects them to STEM learning in school. Region-wide efforts to bring real science to students make accessibility, inclusivity, and equity primary guiding principles.

EXAMPLES AND HIGHLIGHTS

STEM RTP, a multi-year effort of Research Triangle Park, involves a dozen institutions including banks, pharmaceutical companies, universities, and government labs with a mission to expand and diversify North Carolina's STEM workforce. STEM RTP focuses on engaging students from low-income backgrounds, girls, and ethnic

minorities in STEM outreach and mentoring activities. STEM RTP trains scientists on best practices for working with students and provides multiple avenues for interaction, including one-time events, classroom visits, and longer-term mentoring opportunities. They also provide STEM immersion experiences to local educators and equip STEM organizations with opportunities to volunteer.

Audacity Labs is a collaboration between Duke University's Innovation and Entrepreneurship Initiative, the Museum of Life and Science, and two local incubators: American Underground and ReCity. Audacity Labs is a start-up accelerator and co-working space for the region's teenagers, providing skills, coaching, and tools to co-create their own ventures. Included in the program is a formal mentorship program in which teen participants are partnered with practicing entrepreneurs from across the Triangle to field questions; provide guidance; and provide a real-world view of the life, challenges, and joys of being an entrepreneur.

Real Science: Field Trip Fridays (FTF) is a new program created by Durham Public Schools' "Science Alliance" and the Museum of Life and Science, bringing the science "happening in our backyard" into classrooms and homes. Although the idea emerged prior to the COVID-19 epidemic, in 2020 it evolved to support the unique and complex challenges of remote and hybrid learning environments. Each Friday, the Museum's team of science communicators livestreams a virtual field trip from the working location of a scientist, engineer, or other professional who uses science in their daily lives, from bakers to basketball players and doctors to drone operators. Students and teachers can access the stream and participate in the field trip from their classrooms, homes, or anywhere else they might be. The field trips include video content, live tours and experiments, Q&A sessions with science professionals, and instructions for a hands-on science activity that can be tried in class or at home.

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Teachers

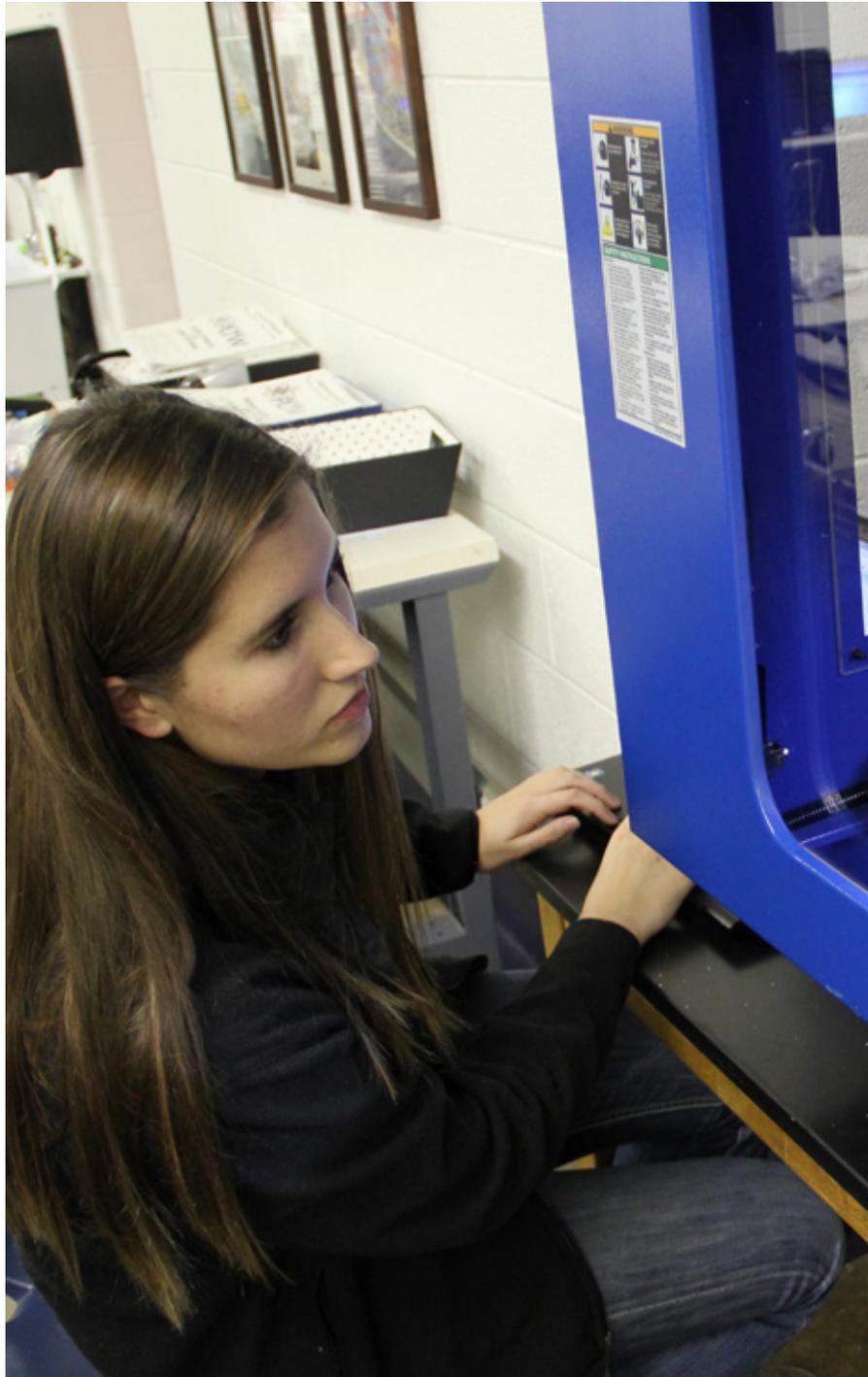
TARGET GROUP

2010

ESTABLISHED

750

CHILDREN/USERS



Simulated Workplace transforms traditional career classrooms into student-led businesses that follow real-world business practices.

West Virginia: Simulated Workplace

West Virginia, United States

As of June 2020, West Virginia's labor force participation rate was only 53 percent, among the lowest in the United States. That's why the state's educators, nonprofits, and businesses are working harder than ever to retain West Virginia's young people and prepare them for more prosperous futures at home. By ensuring that West Virginia's students are ready for in-demand jobs and equipped with essential career skills such as collaboration and organization, the Simulated Workplace program is transforming education and workforce development throughout the Mountain State.

SIMULATED WORKPLACE

One challenge that many businesses and industries face today is finding qualified workers. As students prepare to join the workforce, it is crucial to ensure that they

leave school with in-demand, real-world skills. These skills – which include communication, problem solving, goal setting, and more – are often best learned through hands-on experience in a workplace setting.

To that end, the West Virginia Department of Education and the state's business sector collaborated to create the Simulated Workplace: a statewide program in which student-led businesses replace traditional classrooms in order to replicate real-world work experiences. Teachers become consultants, while students become CEOs, safety managers, project managers, and more. "Company meetings" largely replace lectures, and students themselves take charge of their companies' success. Real-world employers "inspect" and guide the companies, and all students apply to the program, learning interview skills from peers, teachers, and employers alike.

Since 2013, Simulated Workplace has enhanced the apprenticeship model in West Virginia to include "soft skills" in addition to the technical skill sets offered by apprenticeships. Because these soft skills are in high demand by employers, graduates of the Simulated Workplace often quickly rise through the ranks upon taking real-world jobs.

SIMULATED WORKPLACE'S COMMITMENT

By giving students a voice in what their companies do and how they do it, the Simulated Workplace has boosted attendance, stimulated student interest in entrepreneurship, and positively impacted West Virginia's economy.

Today, West Virginia has more than 1,200 student-led companies with more than 24,000 students participating. Representatives from 25 states, 50 school districts, and the nation of Australia have all visited West Virginia to learn more about Simulated Workplaces and to replicate aspects of the program.

EXAMPLES AND HIGHLIGHTS

Simulated Workplace is transforming the lives of West Virginia's career and technical education students, while spurring systematic social and economic development.

- Participating students master high-level technical skills that "stack" along a career pathway; embrace business processes and expectations; and gain soft skills such as leadership, communication, teamwork, and critical thinking.
- Students create products and services with a real-world impact: In the wake of severe flooding in 2016, for example, student-run companies built small, fully functional homes for affected families.
- During the school year, Simulated Workplace companies participate in an economic/community service project. The project provides opportunities for students to meet with community leaders, including mayors, county commissioners, and economic developers to determine what student-led companies can do that will result in a positive economic impact. To date, student-led companies have built "Tiny Home" villages, led county-wide beautification projects, refurbished old buildings, and more.
- Among Simulated Workplace participants, 97 percent give the program an exemplary rating, with 93 percent of students reporting that what they experience in Simulated Workplace environments relates to what they need to know on the job.
- Among students who have completed the Simulated Workplace program, 95 percent have gone on to higher education, the workforce, or the military.

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<https://wvpec.wvu.edu/>

<https://wvde.us/simulated-workplace/>

13–18

AGE GROUP

2013

ESTABLISHED

24 000

CHILDREN/USERS



Regional STEM Hubs create equitable access to real-world STEM experiences for learners across Oregon, igniting students' passion for STEM.

Oregon: STEM Hubs

Oregon, United States

Oregon's 13 STEM Hubs connect learners to STEM experiences early and often, igniting passion and interest in STEM fields. Through robust regional partnerships, Hubs provide the infrastructure to support initiatives and programs between schools, community organizations, industry, and business so that all Oregon students can access high-quality real-world learning experiences.

Oregon is a scenic and beautiful state with rich natural resources, innovative STEM industries and diverse cultural and community leaders. However, the state's assets are not equally distributed, and students, teachers, and schools might not have the time, proximity, or resources needed to access high-quality STEM opportunities.

STEM HUBS

Oregon's STEM Hubs were created to facilitate regional partnerships that provide real-world opportunities for students to experience science, technology, engineering, and math in the state's natural and man-made environments.

Regional STEM Hubs provide the connections and the infrastructure that allows programs and opportunities to be shared across multiple schools, districts, and regions so that any student in Oregon can access the rich resources available within the state's STEM ecosystem. STEM Hubs work collaboratively to bring new initiatives to the network, share learnings, and support the ongoing improvement of STEM teaching and learning across Oregon.

STEM HUBS' COMMITMENT

STEM Hubs operate with the belief that every student, regardless of where they reside in Oregon, deserves access to the learning experiences that will inspire them to be innovators and prepare them to help solve the challenges of tomorrow. Through the state's network of STEM Hubs, teachers and students can access opportunities, programs, or connections that would not otherwise be available.

EXAMPLES AND HIGHLIGHTS

Some of the programs that have been created through the work of the STEM Hubs include:

- Oregon Connections is a web-based tool connecting educators to industry professionals who share their skills and bring learning opportunities to the state's students. Through in-person matches and virtual real-time sessions, industry professionals connect with classrooms to inspire and expose students to real-world opportunities.
- The Chief Science Officer Program elects advocates for STEM and innovation in schools and communities. Chief Science Officers are students elected by their peers in 6th to 12th grade to be liaisons for STEM and innovation in their schools and communities. Chief Science Officers receive leadership training, mentorship, and opportunities to work with business and civic leaders.
- STEM Beyond School provides a community of practice that builds connections among and the capacity of out-of-school educators to provide high-quality, hands-on STEM learning to historically under-served students in grades 3–8.
- The Oregon Science Project is an equity-focused, statewide professional learning network designed to build regional science education leadership throughout the state. The Oregon Science Project supports dozens of professional learning facilitators who lead regional teacher professional development programs around the Next Generation Science Standards. The Oregon Science Project works in the historically under-served rural and semi-rural areas of Oregon.
- Teacher externships give educators a chance to work with industry hosts to complete a mutually beneficial externship experience.

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<http://stemoregon.org/regional-stem-hubs/>

All
TARGET GROUP

2013
ESTABLISHED

60 000
CHILDREN/USERS



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