

# Learners First

*How educators hone their craft*













# How teachers learn

Today, the role of teacher is changing. Gone are the days when a teacher could stand at the front of a classroom as the master of all knowledge. In a rapidly changing world, teachers now find themselves learning right alongside their students.

Teachers are constantly honing their craft through **professional learning**. Also known as professional development (PD) or continuing education, it is one of the most important parts of our education system. Yet professional learning is largely invisible to everyone but teachers and school leaders.

It's here that teachers learn about cutting-edge research and the science of learning. It's here where teachers practice new techniques to connect with their students. It's here where they go from good teachers to great educators.



*Few professions  
dedicate  
as much time as  
teachers do to  
continually improving  
their craft.*

**Professional learning**  
(also known as  
professional  
development or  
continuing education)  
is generally defined  
as a wide variety of  
specialized training,  
formal education, and  
advanced learning  
intended to help  
teachers improve  
their professional  
knowledge,  
competence, skill,  
and effectiveness.



# How teachers learn best

Nearly all teachers take part in mandatory professional learning. In Pennsylvania, teachers must complete 180 hours of professional learning every 5 years to maintain their certification. But many teachers go above and beyond. They invest their personal time and resources because they know that there is no limit to how much they can improve.

Professional learning takes many forms, but scholarly research and surveys of the teaching field show that the most effective and engaging professional learning is:

- **Responsive to teacher experience and student needs**
- **Led by peer teachers and collaborative in nature**
- **Focused on deep engagement with subject matter**
- **Active and inquiry-based with opportunities to “try out” new techniques**
- **Sustained over time to help teachers implement new practices**

Teachers need at least **80 hours of professional learning** to implement a new practice.

The Center  
for Public  
Education

# Where teachers go to learn

With so much to learn, teachers are hungry for new kinds of professional learning. This booklet showcases some of what teachers are learning when they turn to:

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# Colleges & Universities

## Where teachers learn new ideas backed up by research

Colleges and universities are hubs of leading-edge research and world-class innovation. When teachers have opportunities to learn from professors and researchers, they can bring the best ideas in the world into their classroom. Outreach programs expose K–12 teachers to evidence-based instructional techniques and new knowledge about how students learn.

78% of teachers get their ideas from professional learning.

— Education Week Research Center

## From the lab to the classroom

New technologies can be powerful tools for learning, but not all schools have access to the latest equipment, not all teachers are comfortable with new tools, and not all learning technologies are evidence-based.

ABC CREATE solves all three of these challenges. Led by Penn State New Kensington in partnership with the CREATE Lab at Carnegie Mellon University, ABC CREATE provides teachers with access, time, and space to practice using creative technologies and lessons vetted by regional schools of education.

## ABC CREATE

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
14	397	26,000

## Learn LAB

Research fellows from Carnegie Mellon University work with classroom teachers in school-based settings to study and practice evidence-based education technologies.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
4	950	9,997

## Center for Urban Education

This research center at the University of Pittsburgh School of Education helps educators transform student opportunities and experiences in urban school districts through teacher institutes.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
33	207	24,652

## Entertainment Technology Center

Building on years of partnership with school districts on tech integration, this graduate program at Carnegie Mellon University now offers its own professional learning in play-testing, human-centered design, and project-based learning.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
31	250	64,000



“I can’t overemphasize the impact that ABC CREATE has had on the students and teachers in our district. Access to the ideas that come out of this collaborative has led to a different way of thinking about how we use technology in our district.”

**Brett Slezak**, teacher,  
Allegheny Valley School District





Teachers show the greatest change in practice after at least three years of sustained participation in high-quality professional learning.

— Consortium for Policy Research in Education

*“We know that change is hard, so we wanted the teachers to know that we would be there for them and we would be with them every step of the way.”*

**Tracy Teropoli**, Instructional Technology Specialist,  
New Castle Area School District



# School Districts

## Where teachers learn to build a culture of learning

For a school district to achieve its vision for excellent education, investing in its teachers has a first priority. So when districts embark on a new initiative or adopt a new curriculum, they also build strong, multi-year professional learning with a coherent focus, ongoing support, and clear measures of impact.

Teachers learn during a mix of “in-service days” that span the whole school day and also through “pull-out sessions” during the regular school day. This consistent and continual learning helps teachers weave what they learn into their everyday practice and the learning culture of the district.

## Embracing personalized learning

Individual teachers can make improvements in their classroom. Principals can change a single school building. But it takes a district-wide commitment to forge a new learning culture.

Committed to personalizing learning for all its students, New Castle Area School District piloted a continual and comprehensive program to prepare its middle school teachers with a mix of in-person workshops, expert consultation, book studies, co-teaching sessions, and virtual lessons.

## New Castle Area School District

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
1	39	780

## Pittsburgh FAB Institute

Educators at Elizabeth Forward School District created this four-day program where educators rotate through hands-on “maker stations” to practice the tricks of the teaching trade.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
69	503	10,000+

## STEAM Innovation Summer Institute

South Fayette Township School District hosts this annual summer intensive where teachers share knowledge and practice together in a relaxed and supportive environment.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
23	116	10,000+

# Education Service Agencies

## Where teachers learn to practice new skills

Education Service Agencies (ESAs) are among the most important and least known parts of the education system. They provide essential services like bussing and special education. They can also be powerful instigators of instructional improvement. In Pennsylvania, the state's 29 Intermediate Units (IUs) fill this role.

IUs provide high-quality, cost-effective professional learning at every stage of an educator's career. Novice teachers enroll in hands-on training to get comfortable in the classroom. Experienced educators who want to go deeper in their subject can earn additional certifications. And teachers who aspire to school or district administration enroll in leadership programs.

## Teachers try, try again

Like any other craft, the methods and means of teaching evolve over time. So when teachers are looking to refresh their skills, they turn to ESAs to practice their craft with their professional peers.

transformED, one of more than 130 programs offered by the Allegheny Intermediate Unit (AIU), combines hands-on workshops and unstructured “playtime” opportunities for teachers to practice new instructional methods, try out new educational technologies, and learn with expert instructors, designers, and teaching artists.

## transformED

DISTRICTS  
PARTICIPATING:

108

TEACHERS  
LEARNING:

1,000 annually

EDTECH TOOLS  
TO BORROW:

1,000+ pieces

## Intermediate Unit 1 Fab Lab

In the MIT-certified Fab Lab, educators in Fayette, Greene, and Washington counties learn to integrate innovation, design, and digital fabrication to create hands-on multidisciplinary lessons for their students.

DISTRICTS  
PARTICIPATING:

25

TEACHERS  
LEARNING:

515

STUDENTS  
IMPACTED:

5,754

## Consortium for Public Education

While not an official ESA, the Consortium for Public Education fulfils a similar role, but with a special emphasis on connecting teachers and employers to ensure learning is relevant to students' future careers.

DISTRICTS  
PARTICIPATING:

35

TEACHERS  
LEARNING:

4,600

STUDENTS  
IMPACTED:

72,000

Education Service Agencies support more than 80% of all certified teachers in the U.S.

— Association of Education Service Agencies



*“We’re a small district, so when we added a full-time computer science teacher to our high school faculty, that was a big decision. And really, it all stems from the computer science training and resources we got from transformED.”*

**Kris Hupp**, Director of Technology & Instructional Innovation,  
Cornell School District





# Museums

## Where teachers learn to enrich their experience

School isn't the only place learning happens. Museums, libraries, early learning centers, and afterschool programs supplement what students—and teachers—can learn in school. Partners like these are invaluable, especially for schools with limited resources.

Teachers can find high-quality training in subjects that are essential to modern learning, like STEM, hands-on making, and the digital humanities, by turning to the experts at their local museums and science centers.

### Heinz History Center

Technology is revolutionizing how the humanities are taught. The Heinz History Center trains teachers to bring history to life for students using the Smithsonian Learning Lab.

DISTRICTS  
PARTICIPATING:

22

TEACHERS  
LEARNING:

68

STUDENTS  
IMPACTED:

560

### Maker Educator Bootcamp

Developed as the culmination of years of research in the MAKESHOP at the Children's Museum of Pittsburgh, this crash course in maker education helps educators understand how learning derives from making.

DISTRICTS  
PARTICIPATING:

44

TEACHERS  
LEARNING:

315

SCHOOL MAKERSPACES  
LAUNCHED SINCE 2016:

19

## From STEM education to STEM careers

Improving education in science, technology, engineering, and math (the “STEM” subjects) is a national priority. Teachers—and not just science teachers—are doing everything they can to enhance their STEM competencies.

To help schools adopt best practices in STEM education, the Carnegie Science Center created the STEM Excellence Pathway, a research-based and field-proven training initiative that includes multi-day workshops, instructional tools and materials, and access to a national community of fellow STEM educators.

### STEM Excellence Pathway

PARTNER SCHOOLS  
AND DISTRICTS:

576

TEACHERS  
LEARNING:

6,200

STUDENTS  
IMPACTED:

1.8 MILLION

Students have shown greater proficiency in science when their teachers complete training programs at science museums.

— Education Week



*“Our teachers were immersed in hands-on learning that gave them a whole new level of comfort with STEM. Now they’re working on projects across curricula and grade levels.”*

**Jenna Whitney**, teacher, South Allegheny Elementary School

## Learn Lab Consortium

Enhancing the science of learning through partnerships between teachers and researchers.

SEE MORE ON PAGE 4

## Maker Learning Leadership Cohort

Starting and sustaining maker learning programs across all grade levels.

SEE MORE ON PAGE 11

## discoverED!

Partnering with teacher peers across demographic divides to learn from one another.

SEE MORE ON PAGE 13

# Where teachers are learning

## Agency by Design

Pittsburgh-area teachers connecting with a national network of maker educators.

SEE MORE ON PAGE 11

## Real World Scholars

Teachers tapping into student interest and entrepreneurship.

SEE MORE ON PAGE 13



## Beaver County Innovation & Learning Consortium

Teachers sharing lessons and resources to build a center of excellence in Beaver County.

SEE MORE ON PAGE 13

## ABC CREATE

Alle-Kiski valley teachers making technology integration more meaningful.

SEE MORE ON PAGE 4

## Center for Professional Development

Practicing STEM and 21st-century learning methods in rural communities.

SEE MORE ON PAGE 6

## Consortium for Public Education

Connecting schools, businesses, higher ed, and communities to help students thrive.

SEE MORE ON PAGE 6

## CREATE Lab Satellite Network

Localizing best practices in education technology.

SEE MORE ON PAGE 4

# Nonprofit Organizations

## Where teachers learn to expand their vocabulary

Just like the students in their classroom, teachers are constantly learning. Both new teachers entering the field and veteran teachers with decades of experience have a need to constantly refresh their knowledge and seek expertise on specialty subjects like the arts, early childhood, learning disabilities, and STEM.

Mission-driven nonprofit organizations help teachers stay on top of the latest in thought and practice when it comes to building relationships with students, harnessing student creativity and ingenuity, meeting new standards, and personalizing education for each and every student.

## Coloring outside the lines

A well-rounded education that includes the arts helps students develop greater empathy, critical-thinking skills, and capacities for creative problem solving. These benefits multiply when teachers learn to integrate the arts into every subject.

Arts Education Collaborative (AEC) works to help all teachers, regardless of their subject, make the arts central to learning. Teachers who participate in AEC’s professional learning routinely describe the transformative impact of the arts on how well they teach and how well their students learn.

### Arts Education Collaborative

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
20	324	43,531



*“While I've always appreciated the arts, I had received limited training in my undergrad and graduate-level studies. Seeing what other districts are doing created a sense of urgency for me and my fellow teachers to do more.”*

Arts Education Collaborative program graduate

More than 60 nonprofits offer training to educators in western Pennsylvania.

### Trying Together

A regional nonprofit that supports high-quality care and education for young children through advocacy, community resources, and PD opportunities for caregivers.

TEACHERS LEARNING:	HOURS OF TRAINING:	FAMILIES IMPACTED:
75	1,800	100+

### ASSET STEM Education

A national nonprofit that provides teachers with hands-on PD, access to classroom materials through a leasing program, and consulting services utilizing a “teachers teaching teachers” model.

EDUCATOR SCHOLARSHIPS:	TEACHERS LEARNING:	STUDENTS IMPACTED:
125	3,500	150,000

### APOST

Out-of-school learning is an essential part of every student’s educational journey. Allegheny Partners for Out-of-School Time (APOST) trains out-of-school educators to ensure quality learning is available to all students even after the bell rings.

ORGANIZATIONS PARTICIPATING:	EDUCATORS LEARNING:	STUDENTS IMPACTED:
137	574	47,840





*“This was the best professional learning experience of my career. I had the opportunity to learn from so many different teachers, at different locations with different mindsets. It really forced me to get out of my comfort zone. I am a better teacher and colleague because of it.”*

**Maureen Frew**, teacher, Avonworth Primary Center

# National Partners

## Where teachers learn to broaden their horizons

Across the country, dozens of advocacy organizations, research initiatives, instructional institutes, and school design consultancies bring together some of the best minds in education to push teachers’ thinking and support them as they address complex issues.

When these organizations partner with local school districts and education service agencies, they broaden teachers’ perspectives and connect them to networks of their peers to share knowledge, learn from each other, and improve together.

## Making learning happen

Learning is about asking deep questions and working out the answers together. Agency by Design is a multi-year research initiative of Harvard’s Project Zero to make this as true for educators as it is for their students.

Through a partnership with Quaker Valley School District just outside of Pittsburgh, Agency by Design connects teachers with national experts and learning researchers. Together they examine what makes learning valuable, design new student experiences, and pilot those experiences with the support of mini-grants.

## Agency by Design

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
20	30	7,741

More than 20 national training organizations actively partner with educators in western Pennsylvania.

## Common Sense Media

As more schoolwork takes place online, this national organization helps teachers choose and use technology, and promote good digital citizenship for students.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
65	4,800	144,000

## Maker Learning Leadership Cohort

This Digital Promise program amplifies the impact of maker learning outcomes while making it more sustainable for schools and equitable for students.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
10	30	6,656

# Design & Tech Companies

## Where teachers learn to use new tools

Technology permeates every facet of our daily lives, including the ways teachers teach and students learn. Tech companies provide teachers with training, certification, and ongoing support. Over time, teachers learn to move from simple uses of educational technology to truly transformative approaches.

Technology is only one half of the innovation puzzle. The other half is the ability to deconstruct complex problems and design new solutions. With the help of design coaches, teachers are learning to help their students develop the skills and mindsets they'll need to thrive in a complex future.



*“Professional learning with BirdBrain helped me become a more thoughtful and purposeful educator when it comes to using technology in the classroom. The hands-on training helped me figure out how to use it, but the staff helped me dig deeper and ask questions about how I am engaging students.”*

**Amanda Jeane Reichert**, teacher, East Ward Elementary School

## Catalyzing learning with technology

No matter how powerful a piece of technology is, its value to students is nil if teachers can't integrate it into their instruction. That's why educational robotics company BirdBrain Technologies created an online community to help educators.

Each BirdBrain training session is one part computer-science crash course and one part hands-on tinkering session. Combined with a global online community of educators using BirdBrain tools, the company has made it easier for teachers to introduce robotics to K-12 classrooms.

### BirdBrain Technologies

DISTRICTS  
PARTICIPATING:

50

TEACHERS  
LEARNING:

153

+ HUNDREDS MORE ONLINE

STUDENTS  
IMPACTED:

5,000

### Studio A

Design company LUMA Institute partnered with Avonworth School District to create this training intensive for educators to learn design thinking, a powerful tool for unlocking creativity and innovation.

DISTRICTS  
PARTICIPATING:

22

TEACHERS  
LEARNING:

92

STUDENTS  
IMPACTED:

20,000

### Zulama

Through Zulama by EMC School and the Computer Science Teachers Association (CSTA), K-12 teachers can participate in a 30-hour online course to earn a Computer Science and Game Design Certificate.

DISTRICTS  
PARTICIPATING:

62

TEACHERS  
LEARNING:

200

STUDENTS  
IMPACTED:

10,000

62% of teachers say workshops by outside experts are the most effective professional development format.

— Scholastic



# Professional Learning Communities

## Where teachers learn to create centers of excellence

With 500 school districts in Pennsylvania, there is no shortage of teaching talent. But there is a shortage of time and resources. Teachers are forming professional learning communities across district lines to do more together than they can apart.

These partnerships are often based on shared geography or similar demographics, but districts also come together around common interests such as computer science, design thinking, personalized learning, and more.

## Creating a social network for teaching

Learning is a social experience, not an isolated activity. That’s why educators from three school districts in this mostly rural county outside of Pittsburgh formed a professional learning community around their shared interest in science, technology, engineering, arts, and math (STEAM) integration.

The cross-district cohort gathers for sessions exploring the connections among the different STEAM subjects, developing innovative habits of mind, and using the engineering design process as a teaching method.

## Beaver County Innovation & Learning Consortium

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
5	60	8,000

## Real World Scholars

This national community of practice is for teachers looking for ways to give their students real-world experience. Participating teachers learn to harness their students’ interest in entrepreneurship to inspire self-directed learning.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
13	23	1,374

## School Retool

Teachers aren’t the only educators who need professional learning. Hosted locally by the Allegheny Intermediate Unit, School Retool creates a unique opportunity for principals in western Pennsylvania and West Virginia to use “small hacks” to redesign their school culture.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
24	32	28,442

## discoverED!

To cultivate partnership among teachers in districts with differing demographics, discoverED! organizes dynamic group events where teachers swap students for a day to experience how learning happens in different settings.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
12	60+	500+

More than 1,000 educators representing 100 western Pennsylvania districts have enrolled in voluntary cross-district intensives since 2013.

*“The collaboration across districts, grade levels, and content areas has had the greatest impact on me as a teacher. It’s very eye-opening to see that other teachers who are very different from me are working through the same things I am.”*

**Michelle Dietz**, teacher, Beaver Area School District





*“Now I’m looking at everything I teach...How could I turn this into a project? How could I go down to the makerspace with this? It becomes a different lens.”*

**Sto-Rox** AIM Cohort teacher

# Peer Teachers

## Where teachers learn together and build the profession

No one knows education better than the educators. As policies and standards continue to shift, teachers rely on each other for professional growth. Peer-led professional learning gives teachers more ownership over their learning, which helps them feel more committed. Plus, they can align their learning more closely to the skills and resources they need the most.

Research shows that the most effective professional learning for teachers is social, ongoing, and collaborative. Teachers feel most supported when their ongoing formal education can be self-selected and peer-endorsed. Teachers are taking steps to make learning like this the norm, not the exception.

## Teachers lead the way

As part of a teacher-led, district-wide restructuring process that included an embrace of STEAM education, a group of teachers in the Sto-Rox School District just outside of Pittsburgh created the AIM Cohort, a peer-led program that focused on self-directed capacity building.

Teachers created a sequence of group lessons, one-on-one coaching, independent reflection, and self-directed learning. By the end, the teachers were more prepared to lead new forms of instruction with the support of their peers.

### Sto-Rox AIM Cohort

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	STUDENTS IMPACTED:
1	12	1,271

When coached by their peers, 95% of teachers are successful at implementing new practices. — Center for Public Education

### Sevenszo

More and more, teachers are turning to the World Wide Web for inspiration and connection. Sevenszo creates a place online where teachers gather, share with one another, and spread what’s working in their classroom.

ACTIVE IN:	TEACHERS LEARNING:	STUDENTS IMPACTED:
30 US STATES	750+	15,000+

### EdCamp

These teacher-organized events use an “unconference” model where participants design the agenda live at the event. From first-year teachers to multi-decade veterans, teachers at all levels build relationships and share best practices.

DISTRICTS PARTICIPATING:	TEACHERS LEARNING:	TEACHER-LED WORKSHOPS:
26	121	40+



# Prioritizing Professional Learning

Despite the variety of high-quality professional learning available, connecting teachers to these opportunities remains a challenge. Time constraints, budget limitations, and state mandates create real barriers for many teachers. And in some cases, teachers are simply not aware of the PD that exists beyond their school districts.

But as teaching and learning continue to evolve, professional learning is becoming a greater priority. Schools are rethinking their schedules to create more time for teacher learning. Teacher cohorts are being granted release time to attend external training and bring back new practices to their peers. Strategic partnerships with other school districts and funding from outside sources are taking the strain off of district budgets. And more than ever, teachers are being called on to develop and lead PD for and with their peers.



Ensuring high-quality learning for all students depends on ensuring high-quality professional learning for all teachers. There is a lot we can do to make professional learning a priority:

**Policymakers:** Establish state standards for quality teacher professional learning and allocate budget resources to ensure districts, intermediate units, and teachers can meet those standards.

**School Boards:** Adopt a resolution making quality professional learning a district priority and set clear expectations for school leaders to enact a district-wide strategy for professional learning.

**Funders:** Make professional learning a required part of any grant requesting support for new instructional design and implementation programs.

**District Leaders:** Survey your teachers twice a year to find out what they want to learn, how they want to learn it, and what support they will need to implement what they've learned.

**Teachers:** Organize a professional learning community at your school and invite teachers to lead a training, request a training, or co-design new peer-led professional learning.

**Trainers:** Add follow-on activities to your training programs like ongoing coaching or routine reconvenings to assist teachers through the hardest parts of implementation.









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Norton Gusky

Nico Segall Tobon

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“As a teacher you have to be committed to learning for a lifetime first before you can lead your students down that path.”

Robert John Meehan

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