

FY2025

RESEARCH AND EVALUATION IN URBAN ADVANTAGE

What are the Impacts of a Partnership Program to Improve Science Teaching in New York Public Schools?



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PROGRAM DESCRIPTION

Mission:
to support and enrich
the teaching and
learning of science in
the schools of NYC
through **six** research-
based components

Evaluation of
program
effectiveness

Professional
learning (PL) for
teachers and
administrators

Classroom
materials

Teacher
leader
development

Partnership with
science-rich NYC
cultural
institutions

Family
Engagement
Strategies

Urban Advantage by the Numbers

86,430

NYC students in grades 3, 4, 5, 6, 7 and 8 have an Urban Advantage Teacher.

915

Teachers participate in Urban Advantage.

296

Schools are enrolled in Urban Advantage.

UA students reflect the diversity of the NYC Public Schools

Student demographics (%)	Urban Advantage	Citywide
Female	48.4	48.3
Black	16.7	19.5
Hispanic	44.5	42.2
Asian	21.1	18.7
White	14.8	16.2
Multiracial or other	2.8	3.0
Economic Need Index	79.1	73.5
English language learner	20.4	16.3
Students with disabilities	22.1	21.6

Percentages are based on 2023-2024 UA and NYCPS enrollment numbers. Percentages do not add up to 100% due to missing demographic information.

What happens in Urban Advantage Professional Learning?

1

Urban Advantage's research-based professional learning focuses on **scientific practices, science content, and effective teaching strategies.**

2

Each of Urban Advantage's eight institutions offer **unique courses** that connect classroom science and curricula to **real-world, community-based learning.**

3

Courses focus on the use of **phenomena** to support learning, discourse strategies and evidence-based explanations.

4

Teachers receive year-round access to field trips at all eight institutions and funding to support **student learning, engagement and investigations.**

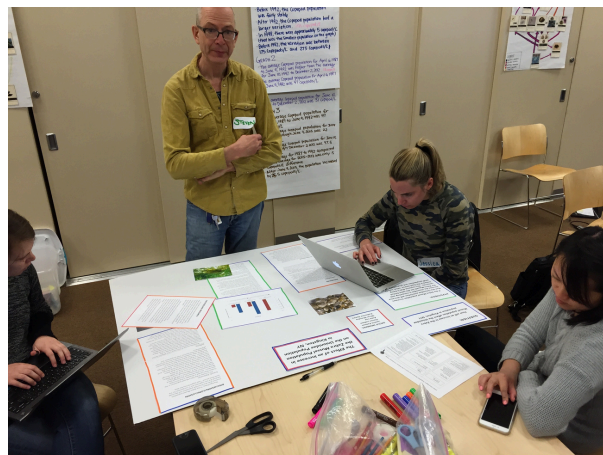
What features of Urban Advantage are supported by research on high quality teacher professional development?

Urban Advantage is a **long-term** professional learning program; even experienced teachers can learn and grow in Urban Advantage. Teachers can participate in Urban Advantage for five years and then they have the option to join the Alumni or Fellows programs. Programs that take into account the changing needs and interests of teachers over time are reflective of the important understanding that teachers can and should continue to learn even as they grow in mastery and expertise. This reflects an appreciation for the value of lifelong learning for teachers and for what scholars call “teaching as a learning profession” (Darling-Hammond & Sykes, 1999).

To do so, Urban Advantage provides teachers with **many hours of professional learning** across several years; it is not a one-day workshop model. Research has underscored that

one-shot workshops for teachers are rarely an effective means of helping teachers learn, especially to change or strengthen their practice, even though many teachers continue to be asked to participate in them and schools continue to offer them.

Urban Advantage is focused on **specific scientific content and science teaching practices**. This is especially important because the most powerful professional development programs that have the most impact are those that are focused squarely upon content and practice of teaching and that identify specific instructional practices that teachers can bring back to the classroom (NAS, 2015). Furthermore, UA courses often focus teachers on **examining student thinking**—a feature that some studies have shown has an impact not only on teacher knowledge but also student learning (Wilson, 2013; Lynch et al., 2025).

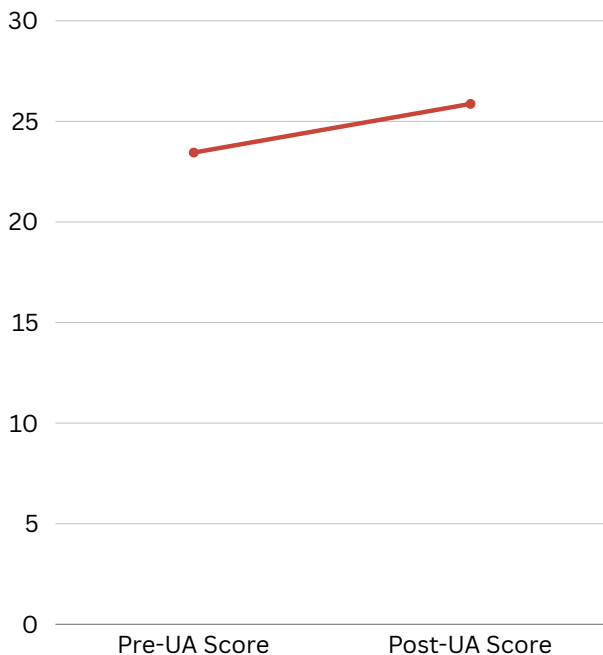


Does Urban Advantage PL impact teachers' self-reported confidence in phenomenon-based science teaching?

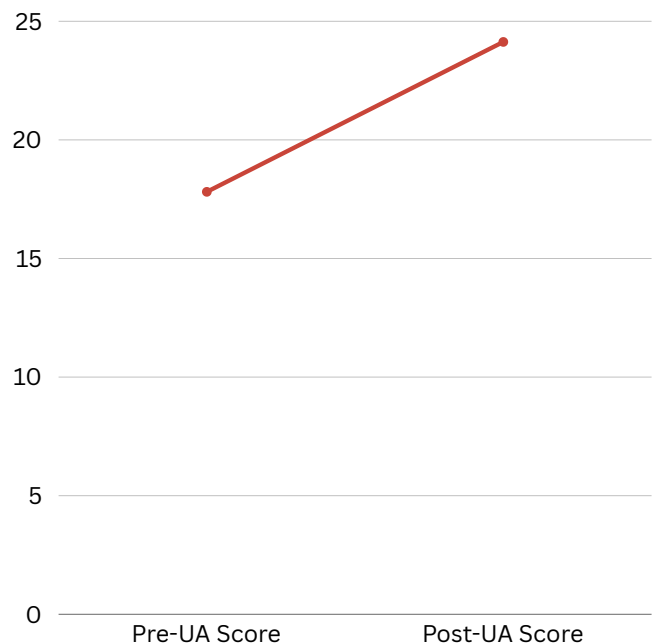
To measure the impact of participating in professional learning, teachers in their first year of Urban Advantage professional learning completed a pre/post survey which asked them to rate their **confidence to enact phenomena-based teaching practices**. The survey scale, adapted from Lowell & McNeil (2023), asked about practices such as **eliciting students' ideas about scientific phenomena, pressing for evidence-based explanations, and connecting to students' personal and cultural backgrounds**.

The maximum score on the confidence scale was 30. **Middle school teachers' average confidence score increased from 23.45 to 25.87**, which was a statistically significant improvement ($t(58)=3.4$, $p=.001$). **Elementary teachers reported an even larger increase in confidence, from 17.81 to 24.13** ($t(73)=6.9$, $p<.001$). This is the first year of a longitudinal study of this cohort of teachers.

Middle School Teachers Mean Scores



Elementary Teachers Mean Scores

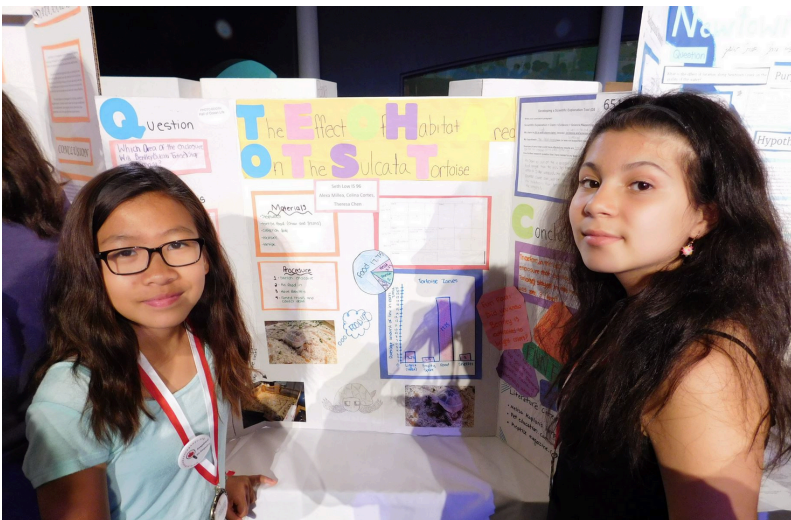


How does Urban Advantage impact teachers' practice in the classroom?

A qualitative study of UA middle school teachers' classroom practice found that they **used tools from the UA professional development to support students in carrying out science and engineering practices**, such as writing and investigation scaffolds (MacPherson et al., 2019). Early findings from UA elementary school teachers' classrooms also provides evidence of key shifts in terms of **eliciting students' ideas, connecting to students' lives and communities, and supporting students to construct scientific explanations and arguments** (Lorenzetti, 2025).



A shift toward NGSS/NYSSLS-aligned practice means that UA is improving the science teaching force in NYC.



What other important impacts does UA have for teachers?

The **UA Fellows** and **Lead Teacher** programs offer experienced teachers pathways toward leadership and additional opportunities to network with other professionals. The UA Fellows program helps teachers in UA learn from one another, build community, and strengthen their instruction through inter-visitation. Lead Teachers partner with one UA institution to co-lead professional learning and share examples of strategies learned can be connected to classroom practice.

The in-depth, long-term nature of the program, and leadership opportunities for experienced teachers, may explain the finding that **UA participation increases teacher retention**. UA science teachers are, on average, 3.8 percentage points more likely than non-UA science teachers to remain teaching at their school the following year. This impact is substantially higher for teachers with 3-5 years of teaching experience (Shiferaw et al., 2025). This positive impact on retention is a consistent finding of the long-term evaluation of Urban Advantage.

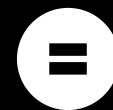


“
Being part of this program pushes me to be better. The conversations that we have make me be more reflective of my practice and doing this with other educators that are committed is really motivating.
”
-Urban Advantage Teaching Fellow

Can we put a dollar amount on that?

In terms of science teacher retention, it costs approximately \$21,000 to replace a teacher if they choose to leave the system (Garcia & Weiss, 2019). Participating in UA increases a teacher's likelihood to stay by about 4%. The program serves about 900 teachers per year, so that's about 35 teachers per year that are more likely to stay, saving the city \$735,000 it would cost to replace them.

**35 teachers in UA
per year are more
likely to stay**



**\$735,000
(cost of replacing
the teachers)**

How does Urban Advantage impact students' engagement and performance in science?



“The coursework had a direct impact on teacher practice by introducing new instructional strategies and resources that enhanced student engagement and learning. **For example, teachers incorporated hands-on activities from Urban Advantage to deepen students' understanding of scientific concepts, such as utilizing field trip experiences to reinforce classroom learning. Some educators adjusted their questioning techniques based on professional learning sessions, fostering more inquiry-based discussions.**”

-Urban Advantage Administrator

Studies from 2010 to the present have documented a **positive effect of participation in the program on performance on state science test scores** (e.g., Weinstein et al., 2010, 2014, 2023, 2025).

Recent results from elementary classrooms show especially promising results. Elementary **students' perform 0.08 SD higher on a standardized measure of science** achievement (Weinstein, 2025).

“UA helps my teaching by modeling hands on activities [and] showing how it can be implemented in the classroom. It really increases student engagement. Asking them probing questions about their prior knowledge on things that they've seen has really helped me in my classroom.

-Urban Advantage Elementary Teacher



How does Urban Advantage work with Administrators?

630 Middle and Elementary School Administrators engage in UA events each year.

- **Four** administrator events (presented as Professional Learning “Breakfasts”) per year which all Urban Advantage Administrators are invited to attend.
- A **monthly newsletter** is sent to all UA Administrators to keep them informed of UA events and happenings. Monthly prompts are also included that they are encouraged to discuss with their science team.

“Attending the Administrator Breakfast was incredibly valuable in supporting my role within the school. It provided a **dedicated space to connect with fellow administrators, share common challenges, and exchange practical strategies that are working in other buildings.** It was also encouraging to be reminded that we’re not alone in the work—we’re part of a broader team striving for the same mission. I left the breakfast feeling re-energized, with a **renewed focus on supporting staff and improving student outcomes.**”

-Urban Advantage Administrator on the breakfasts



“There is a need for Administrators to empower teachers in order to discover their potential and limitations for themselves and develop their competence in professional development” (Balyer, 2017). Urban Advantage provides events for all UA administrators, with the understanding that teachers are more likely to be succeed in shifting their practice when their administrators are knowledgeable and supportive.

How does the impact of Urban Advantage compare to other large-scale science PD programs for teachers?

Districts and schools routinely engage professional development programs to provide opportunities for teachers to learn. However, **very few can offer evidence of the effectiveness of their programs, or their impact on teacher and student learning.** Reviews of studies of science professional development programs find most of the research on professional development in general is based upon correlational studies or teachers' self-reports (Wilson et al., 2017).

The Urban Advantage program stands out as a professional development program that has an enduring **record of research that has demonstrated positive impacts from 2010 through to the present.** Impacts include

- **Teacher retention at the school and district levels** (Shiferaw et al., 2025)
- **Improvements in teachers' inquiry-based science teaching practices** (MacPherson et al., 2019; Lorenzetti, 2025)
- **Student gains on a standardized test of science achievement** (Weinstein et al., 2010, 2014, 2023, 2025).



How does Urban Advantage's impact on student learning compare to similar programs?

Compared to similar large-scale, science-focused PD programs, Urban Advantage has a similar effect on student learning gains. Research has uncovered effect sizes of PL that vary depending on factors such as duration and content focus - ranging from negative or null effects to a maximum of 0.52 SD (Lynch et al., 2025). For example, a 2015 study of a science teacher PD program (Taylor et al., 2015) found an effect size of approximately 0.09 standard deviations, compared to UA's most recent published effect size of 0.08 standard deviations.

The program reported in Taylor et al (2015) was curriculum-based (teachers all used a standard curriculum in the classroom). Urban Advantage focuses upon tools, strategies and teaching practices. We would expect a curriculum-based program to have a larger effect size (it is a more dramatic intervention). Thus, **UA's effect size is comparable to a curriculum-based PL program. Urban Advantage has an impact on student learning outcomes even across contexts using different curricula.**

What's an effect size?

Effect size quantifies the magnitude of the phenomenon (and not just whether it is “significant”).





The Council of the
City of New York

ACKNOWLEDGEMENTS

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Public Schools

WHERE CAN I FIND THIS RESEARCH?

[This page](#) has links to the papers and a summary of their findings. Also,
check out the research and publications page on the [UA website](#).

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