

Frequently Asked Questions about Research on the Urban Advantage Program

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

Importantly, Urban Advantage is a *long-term* professional learning experience; even veteran 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).*

How does Urban Advantage Impact Teachers?

UA has been shown to support important shifts in teaching around facilitating students’ science investigations. A qualitative study of UA teachers’ classroom practice found that they used tools from the Urban Advantage professional development (e.g. writing and investigation scaffolds) to support students in carrying out science and engineering practices. (MacPherson, Hammerness & Chavez-Reilly, in review).

Furthermore, UA participation increases teacher retention. UA science teachers are, on average, four 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 (16 percentage points) (Weinstein & Shiferaw, 2017).

A shift toward NGSS-aligned practice, and a stronger likelihood that science teachers will stay in the profession, means that UA is improving and strengthening the science teaching force in NYC.

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 Urban Advantage 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.

But does Urban Advantage actually help students learn science?

Yes. The most recent evaluation of the program, conducted by researchers at NYU, showed that students that had teachers that participated in Urban Advantage scored approximately 0.08 standard deviations higher than students who did not participate in the program

In fact, studies *from 2010 to the present* have documented a positive effect of participation in the program on performance on state science test scores. Summaries of the papers documenting these studies can be found [here](#).

Not sure what a standard deviation looks like. How can we think about the impact on student learning in practical terms?

Another way to think about the "UA effect" – having a UA teacher improves rates of science proficiency by 1%. This means that about 127 more UA students per year achieve "proficient" on the ILS exam because of UA.

How does the impact of the program compare to similar, large-scale PD programs?

This is a tough question to answer since so few similar programs conduct rigorous research on student learning. Districts and schools routinely engage professional development programs and providers to support teacher learning and provide opportunities for teachers to learn. However, **very few of those organizations or professional development organizations can offer evidence of the effectiveness of their programs, or their impact on teacher and student learning.** In fact, research reviews of studies of science professional development programs finds most of the research on professional development in general is based upon correlational studies or teachers' self-reports (Wilson et al., 2017). It is rare for studies of professional learning programs to have explored or have evidence for the impact of professional development on student learning, and even fewer include large-scale studies with multiple schools and districts (National Research Council, 2011). The Urban Advantage program stands out as a professional development program that has an enduring **record of research that demonstrates positive impacts from 2010 through to the present—from retaining more teachers in the district (Weinstein & Shiferaw, 2017) to supporting improvements in teacher practice (MacPherson et al., in preparation); to positively affecting students science test outcomes (Weinstein et al, 2010, 2014, 2018)—in the largest school district in the country, and one that is among the most diverse.**

Compared to similar large-scale, science-focused PD programs, Urban Advantage has a similar effect on student learning gains. 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. This PD program was slightly different in that it was curriculum-based (so teachers all used a standard curriculum in the classroom), which is not the case with Urban Advantage. We would expect a curriculum-based program to have a larger effect size (it is a more dramatic intervention); however, **UA's effect size was comparable, revealing that the tools, strategies and practices teachers learn in the program have a strong impact on student learning outcomes.**

Where can I find this research?

[This page](#) has links to the papers and a summary of their findings. You can email Anna MacPherson (amacpherson@amnh.org) with questions.

References

- Darling-Hammond, L., & Sykes, G. (1999). *Teaching as the Learning Profession: Handbook of Policy and Practice*. Jossey-Bass Education Series. Jossey-Bass Inc., Publishers, 350 Sansome St., San Francisco, CA 94104.
- Garcia, E. & Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought. Economic Policy Institute. Washington, DC.
- National Academies of Sciences, Engineering, and Medicine. 2015. *Science Teachers' Learning: Enhancing Opportunities, Creating Supportive Contexts*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/21836>.
- Wilson, S. M. (2013). Professional development for science teachers. *Science*, 340(6130), 310-313.