EVENT SUMMARY

Supporting and expanding the K-12 STEM teacher pipeline

By Michael Hansen

On May 8, 2025, the Brown Center on Education Policy at Brookings hosted a panel discussion on the persistent and growing shortage of STEM teachers in K-12 education. The event brought together experts from teacher training programs, nonprofit leadership, and policy research to explore the challenges and opportunities in strengthening the STEM teacher pipeline. Panelists included Ann Cavallo (University of Texas at Arlington), Talia Milgrom-Elcott (Beyond 100K), Tuan Nguyen (University of Missouri), and Iris R. Wagstaff (American Association for the Advancement of Science). Brookings Senior Fellow Michael Hansen moderated the discussion.

Hansen opened the conversation by highlighting the urgency of the issue: “K-12 teaching positions in science, technology, engineering, and math... continue to account for a disproportionate share of hard-to-staff positions.” He noted that the supply of newly certified STEM teachers has declined sharply over the past decade, even as demand for STEM instruction in schools continues to rise.

Nguyen provided a data-driven overview of the shortage, saying that as recently as one decade ago: “we used to produce around 33,000 STEM teachers every year... by 2022, that has dropped by a third.” He emphasized that the teacher labor market is highly localized, with shortages varying by region and subject area, and warned that “up to 400,000 underqualified teachers [are] teaching in our schools.”

Panelists agreed that recruitment into STEM teaching faces significant hurdles, including negative public perceptions of the profession. Cavallo pointed to common perceptions about pay, noting that in her region, “teachers start with a salary of $64,700 plus a $5,000 signing bonus if they’re STEM.” She stressed the need to “elevate [teaching] and never disparage it... we are proud to be STEM teachers.” She stressed the need for individuals to be aware of the facts about teaching, rather than being misled by stereotypes or negative cultural messages.

Milgrom-Elcott introduced the concept of STEM teachers as “keystone species” in the educational ecosystem, referencing Beyond 100K’s research showing that “the number one factor that created belonging [for students] was teachers by a 2:1 ratio.” She argued that fostering belonging in classrooms—especially for students historically excluded from STEM occupations—is essential to both student and teacher retention.

Wagstaff invoked her own biography as a key motivation for her work and advocacy for the opportunities afforded in STEM disciplines. Her story is an unlikely one: growing up in rural North Carolina with no Black role models in STEM, but her mother recognized her latent skills and STEM as a viable path for upward mobility. Wagstaff's background also informed her expansive views on recruiting teachers from different professional backgrounds and career stages: "We need to recruit from non-traditional sources, we need to start earlier... we need to think about strategic partnerships between industry, academia, nonprofits, and federal agencies."

Retention was another major theme. Nguyen noted that while STEM teacher attrition rates are not significantly higher than other subjects, "STEM teachers migrate from poorly resourced schools into better resourced schools," exacerbating inequities. Cavallo described how her program supports new teachers through mentorship and induction, saying, "we have supervisors that can stay and partner with the schools for at least their first two years of teaching." Milgrom-Elcott added, "If you want students to feel belonging, then our teachers need to feel belonging."

On the policy front, the panel uniformly expressed concern about declining federal support, which may undermine current progress. In the absence of federal support, the conversation turned to state and local school leadership. Wagstaff highlighted successful state-level models like the North Carolina Teaching Fellows Program and emphasized the need for "strategic collaborations and partnerships."

The conversation concluded with a call to action. "We change the world, we change the future," said Cavallo, urging greater political engagement and public investment in education. Milgrom-Elcott echoed the sentiment, stating that "every organization, every citizen, every sector has something to contribute" to solving the STEM teacher shortage.