**100Kin10**
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# Confronting National Teacher Shortage, 100Kin10 Survey Explores Tactics for Training and Retaining Excellent STEM Teachers

## STEM Curriculum Standards, Pedagogical Knowledge and Skills, and Content Rank as Top Priorities in Programs that Prepare and Develop STEM Teachers

NEW YORK—100Kin10, the national network committed to training and retaining 100,000 excellent K-12 STEM teachers by 2021, today released the results of its Annual Partner Survey, which asks many of the country's leading K-12 STEM education organizations how they are preparing and developing the next generation of STEM teachers. Recognizing the national teacher shortage and other gaps in STEM education, the survey seeks to offer insights into the best practices, challenges, and trends experienced by organizations working with STEM teachers across the U.S., covering a range of issues in K-12 STEM education.

"Nearly every state in the country struggles to fill its classrooms with excellent STEM teachers, and one of our missions is to better understand why and what we can do about the shortage," said **Talia Milgrom-Elcott, executive director and co-founder of 100Kin10**. "We want to know what's working, what isn't and what we all can be doing better as the country strives to fill the gaps in STEM education."

To explore the tactics and strategies that might help address the shortage of highly skilled STEM teachers, the Annual Partner Survey, conducted in summer 2015, collected a body of data on 242 programs offered by 157 unique organizations.

The 2015 Annual Partner Survey finds that for programs *preparing* new teachers and *developing* existing ones, the top areas listed as priorities are: Incorporating new standards (75.5%), Pedagogical content knowledge (70.5%), Content knowledge (45.5%), and engineering (41%). Fewer organizations list Student Data (18%), Classroom Management (17.5%), Active Learning (11%), and Social-Emotional Learning (8%) as one of one of their top priorities.

The programs surveyed represent a range of approaches and strategies: some contribute thousands of STEM teachers into the pipeline each year, while others train just 10 each year but experiment with new and innovative approaches to STEM teacher preparation. As vetted partners of the 100Kin10 network, however, all participating programs have been assessed for their commitment to teaching excellence and the quality of their preparation. (Except for funding partners and government agencies, nearly all of 100Kin10's partner organizations responded to the survey.)

The survey is organized to follow the six phases of a K-12 STEM teacher's professional life—recruitment, preparation, hiring, induction, development, and advancement. (See definitions here.)

The responses suggest that programs that are training and developing STEM teachers consider preparing teachers to use the new curricular standards (such as Common Core State Standards and the Next Generation Science Standards)a high priority, as well as making sure teachers have the pedagogical skills to effectively communicate STEM concepts for their particular students. 100Kin10 finds the survey results encouraging, while underscoring the room to grow in many areas. Research has shown, for example, that topics like engineering, which is a growing need for our economy and has been a central focus of White House initiatives, helps contextualize science for deeper learning and teach students critical thinking skills—which means STEM teachers need greater training in the area, too.

"Our hope is that this annual survey helps pull back the curtain on how we as a country are addressing the STEM teacher shortage," said **Milgrom-Elcott**. "On one hand, the survey shows there are real commonalities across programs like focusing on standards and pedagogical knowledge. On the other hand, there is a lack of cohesion among other important areas in STEM education, like active or project-based learning. Our hope is that this survey will hold a mirror to our network partners and the field at large to help all of us reflect on priorities and improve."

The survey indicates that successful hiring rates might be associated with programs focused on pedagogical content knowledge during the "prepare" phase: training programs that were successful in getting 90% or more of their participants *hired* were more likely to have a focus on pedagogical content knowledge than training programs overall, though more data would need to be collected to make a conclusive statement.

Similarly, the survey indicates that development programs that were successful in *retaining* 90% or more of their participants were more likely to have a focus on content knowledge, pedagogical content knowledge, engineering, and incorporating new standards than development programs overall, though more data would need to be collected to make a conclusive statement.

The Annual Partner Survey is just one of many ways 100Kin10 cultivates research, collaboration, and problem-solving among STEM education and teacher advocates. At the halfway mark to 2021, the 100Kin10 network of 280 organizations has added nearly 40,000 new STEM teachers across the country, placing the network on track to reach the 100,000 goal by 2021. Additionally, the network has enlisted new teachers who never previously considered going into STEM education, while helping tens of thousands more stay and keep growing in the profession. For more on 100Kin10 and the Annual Survey, visit 100Kin10.org.

The Annual Partner Survey was made in possible in part by funding from Chevron.

**ABOUT 100KIN10**

100Kin10 is a non-profit organization committed to recruiting, training, and retaining 100,000 excellent science, technology, engineering, and math (STEM) teachers by 2021. 100Kin10 encourages multi-sector collaboration and provides the vision and resources to help nonprofits, foundations, academic institutions, and businesses meet their ambitious commitments to educate the next generation of innovators and problem solvers. More information is available at www.100Kin10.org.

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