

# Planting the SEEDs for Success

2017

## Recruiting and Preparing Effective STEM Teachers

One of the most pressing challenges in K-12 education is the shortage of teachers with expertise in science, technology, engineering and mathematics (STEM) fields. This problem is particularly acute in high-need schools which struggle to recruit and retain effective STEM teachers. Researcher Richard Ingersoll, for example, reports that more than 28,000 STEM teachers leave the profession each year.<sup>1</sup>

The National Institute for Excellence in Teaching (NIET), high-need K-12 districts in Arizona and Arizona State University (ASU)--whose teaching college is one of the largest new teacher preparation programs in the country--created a partnership to address this pressing need.

**The *Planting the SEED* partnership prepares highly skilled middle and high school math and science teachers, pairs intensive classroom preparation with intensive training in STEM subjects, and places these new teachers in high-need districts.** With the support of a federal innovation SEED grant (Supporting Effective Educator Development), the partnership is preparing more STEM-qualified teachers, ensuring they have highly effective classroom instructional skills and placing them in high-need districts that have ongoing support structures in place to bolster their success.

The support structures in each school are designed to help retain STEM teachers, and provide opportunities for professional growth and advancement into leadership roles. The innovative practices pioneered in this partnership have been integrated into both clinical practice and coursework in ASU's teacher preparation program.

*"The content teacher candidates learn in coursework is directly tied to instructional skills they learn in their clinical practice--there is no disconnect. They are supported in making this connection explicit.*

*For example, we talk about strategies for academic feedback, and then I go do a walk-through and those strategies that we've talked about in coursework are being implemented in the classroom. It's fresh and teacher candidates are able to apply it right then and there."*

- Ruhi Khan, Clinical Assistant Professor and Site Coordinator, Arizona State University



## Recruit a High-Caliber Cohort of STEM Teacher Candidates

The partnership's goal was to train over 200 STEM teachers in direct partnership with K-12 districts. Teacher candidates were supported by university staff while completing their clinical experiences, and university staff were fully embedded in K-12 districts to deliver coursework. **To date, 189 new math and science teachers have completed the program.**

## Engaging the Engineering Department to Train Teacher Candidates and Mentors

*"My mentor teacher has been the foundation of my growth this year. I am certain that I am a better educator because of her."*

- Kristen, ASU Teacher Candidate

STEM teacher candidates are trained to connect strong instructional practices with the deep content needed for success in STEM subjects. The SEED partnership worked with K-12 districts to create a process for identifying a strong mentor teacher for each teacher candidate. Once paired, mentors and their teacher candidates participated in intensive STEM training together. This additional training was delivered by the ASU Engineering Department in a series of four sessions. **By training together, mentors were well-prepared to support teacher candidates to build their STEM knowledge and skills and deliver high-quality STEM lessons.**

## Teacher Candidates Graduate Ready for the Classroom

STEM teacher candidates developed their instructional skills over the course of a year of student teaching. On average, teacher candidates performed above expectations by graduation, and were ready to enter the classroom.

Embedding university faculty at the district level strengthened the partnership between the university and the school districts, and ensured that new teachers were well-prepared to meet district expectations.

### *Planting the SEED* Teacher Candidates Exceed Expectations by Graduation



*"My principal couldn't believe I was a first-year teacher. My exposure to best practices at ASU and in my student teaching experience at a partnering school put me head-and-shoulders ahead of expectations. I looked at the evaluation rubric before my first observation and thought, 'I've got this.'"*

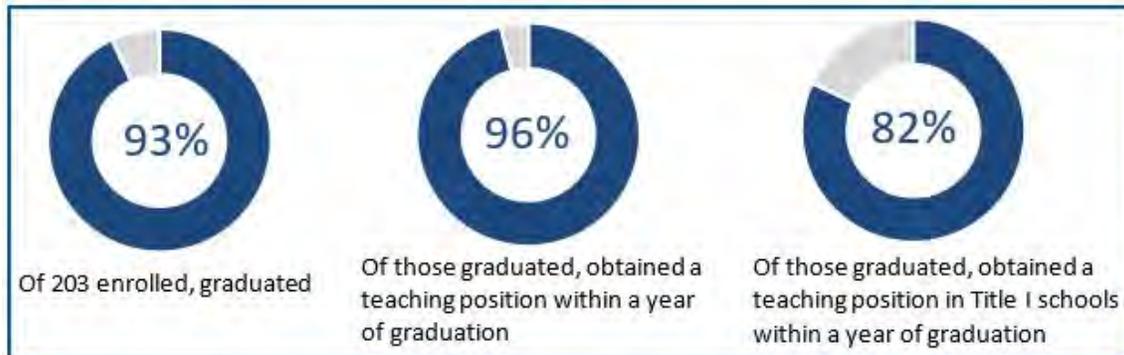
- Lorialle Haynes, Teacher, Collier Elementary School



## More STEM Teachers for High-Need Schools

Ninety-three percent of STEM teacher candidates graduated, and 96% of graduates obtained a teaching position within one year of graduation. Eighty-two percent secured a teaching position in a Title I school. The partnership's strategic approach to recruitment, training and placement has proved highly effective.

### STEM Teachers Graduate, Get Hired, and Make a Difference



## Support Extends Through the Early Years of Teaching

*"There are very few other programs out there that allow teachers to give feedback to teachers in a structured way. Then you set up a culture where anyone can give feedback to each other because feedback is accepted, appreciated and the norm in our school—rather than the negative or something to get defensive about."*

– Betsy Hargrove, Superintendent, Avondale Elementary School District #44

Partner K-12 districts are implementing the TAP System, or best practices based on TAP, to put in place strong systems of ongoing support. New STEM teachers benefit from frequent observation and feedback by teacher leaders as well as administrators. They also participate in weekly professional learning led by teacher leaders that provides them with multiple opportunities to learn from highly effective colleagues and collaborate to address student needs.



<http://www.niet.org/newsroom/videos/event/29/79>

Through the partnership, teacher candidates have access to online tools and resources through the NIET Educator Effectiveness Preparation & Support System (EE PASS) and the ASU Professional Learning Library that support their continued learning. EE PASS houses a video library of more than 200 hours of professionally filmed classroom lessons and other footage (including pre- and post-conferences and coaching sessions) designed to improve teacher performance. Participants can access interactive user-directed training experiences on each of the indicators of strong instructional practice.

The ASU Professional Learning Library similarly includes multiple resources, including open-source resources which are available to teachers. In partnership with the Sanford Inspire Project, over 100 modules have been created to support personalized professional development. These resources support and extend professional learning for STEM teachers.