The EnCorps Edge

EnCorps
IGNITE A PASSION FOR STEM

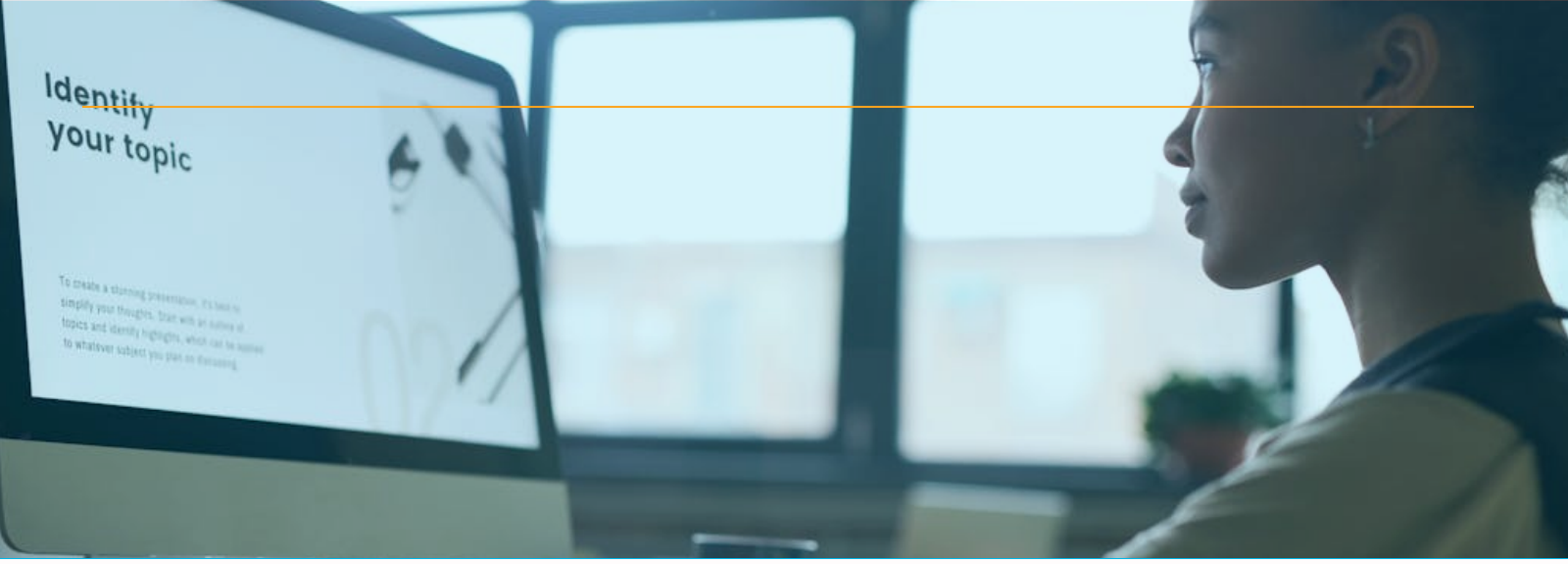
The EnCorps Edge: Real-World Experience, Rigorous Training, Exceptional Teachers

Summary

For years, the United States has been struggling with a dual crisis-students aren't meeting performance standards in math or science, and there are persistent and growing shortages of STEM teachers. Both of these challenges were further exacerbated by the COVID-19 pandemic and its impact on schools, students, and educators.

There is a clear and urgent need to recruit and retain qualified teachers, especially in STEM subjects, but the talent pool is dwindling as teachers continue to exit the field in high numbers. For the past 18 years EnCorps has presented an innovative solution, tapping into a different talent pool of qualified potential teachers-STEM professionals. But does that approach work? Are the Fellows EnCorps recruits actually prepared, qualified, and committed to teaching in schools, many of which are underserved and under-resourced? And once they're in the classroom, do they stay?

A new impact survey from EnCorps reports: Yes. On all counts.



A Dual Crisis

Student Underperformance

We have long been grappling with stagnant or falling student performances in science and math. In the 2018 Programme for International Student Assessment (PISA), U.S. students ranked 31st in math and 10th in science compared to their peers. In the 2022 PISA assessment, the U.S. ranking in mathematics increased, but only because other regions' education systems suffered greater learning losses due to the pandemic-the raw score data dropped by 13 points, reaching the lowest levels in the history of U.S. participation in the assessment.

National data corroborates this underperformance. National Assessment of Educational Progress (NAEP) scores in math regularly rose between 1990 and 2007, but have since stagnated, with significant drops occurring between 2020 and 2022. In the 2024 NAEP results, only 27% of students in the country were proficient in math, and students of color fared worse, with only 14% of Latinx and 9% of Black/African American students having been supported to meet 8th grade math standards.

This ongoing failure to adequately support students to meet national standards is due in part to the persistent lack of qualified STEM educators - which is itself a worsening crisis. California alone will require over 3,000 additional math and science teachers each year for the next 10 years to meet demand.

Declining Teacher Workforce

There simply aren't enough math and science teachers-and there haven't been for many years. In 2016, the Learning Policy Institute issued a report about the growing teacher shortage that projected a shortfall of 100,000 educators annually, particularly in high-need fields like math, science, and special education. By 2019, 50% of school districts in the country reported they were struggling to attract and retain STEM teachers. These shortages were further exacerbated by the COVID-19 pandemic, with nearly 300,000 public school educators and staff leaving the profession between 2020 and May 2022. 5 years later, school districts still have not recovered.

This shortage also has compounded negative impacts on students of highest need. Schools in historically overlooked and under-resourced communities experienced some of the greatest learning regressions following the pandemic, as well as greater recovery hurdles. These students have the most to gain from access to diverse, committed teachers who can effectively engage them in subjects that they may struggle to perform well in, like science and math. And these are the students and school districts we focus on at EnCorps.

A Different Talent Pool

The EnCorps Model

The EnCorps STEM Teachers Program® recruits, selects, and supports experienced STEM professionals and those with advanced STEM degrees to become impactful, long-term teachers, thus addressing the critical STEM teacher shortage by tapping into a different talent pool. However, this isn't just about recruiting subject experts to become teachers-it's that these specific people (STEM professionals interested in a second-act career in teaching) are uniquely positioned to become effective teachers. Their domain knowledge, real-world experience, and training with EnCorps together set the stage for them to become engaging educators and role models.

EnCorps Teachers Fellows bring the subject expertise and real-world experience that qualify them to instruct students in science and math subjects, but they need significant training and support to become successful teachers. This foundation is developed through the EnCorps STEM Teachers Program®, which provides personalized support, thoughtful training, substantial exposure to actual classroom teaching, and guidance on certification and credentialing. In 2024, EnCorps wanted to understand the effectiveness of this approach and surveyed EnCorps STEM teachers, who have been teaching for 5.75 years on average, and their principals to understand how previous industry work experience affects their teaching practices as well as their students.

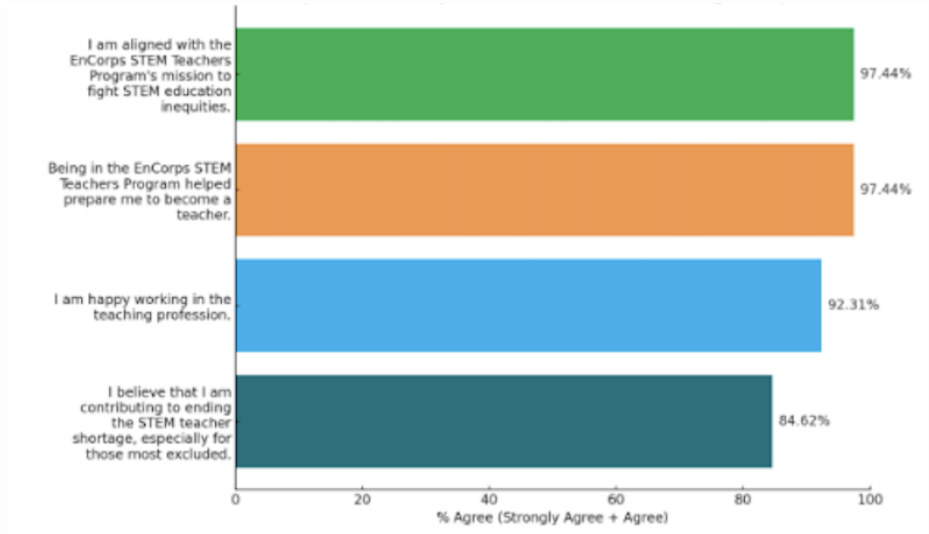


Figure 1: Teacher Self-Assessment of Mission Alignment, Program Experience, and Efficacy. This chart displays EnCorps teacher survey results highlighting the extent to which teachers agree with statements around their alignment with EnCorps' mission, the impact of EnCorps' Teacher's Program, and their efficacy as teachers. Percentages represent the proportion of teachers who selected "Agree" or "Strongly Agree"

EnCorps Teacher Survey Results: Self-Assessment and Program Experience

The data received emphatically demonstrates the efficacy of the EnCorps model:

- Teachers overwhelmingly feel qualified and prepared, and cite their previous work experience as a strength in teaching and engaging students in STEM subjects
- Teachers also cite the EnCorps training and support as a driving factor in their confidence and competence in the classroom
- Principals agree that EnCorps teachers are effective in the classroom and can engage students more fully in the subject matter because of their ability to make real world connections between curriculum and students' lives
- The teachers EnCorps recruits stay in the field. 80% of EnCorps teachers are still teaching 5 years after they were recruited.

Impact: Professional STEM Experience and Teaching Efficacy

Since 2007, EnCorps has recruited over 1,360 STEM professionals to explore teaching , which has in turn made high-quality STEM learning accessible to more than 245,000 students. These EnCorps educators have an average of 17 years of professional experience in STEM fields, and 100% of the teachers surveyed agree that their STEM industry experience positively affects their teaching practices.

One EnCorps teacher gave a concrete example of what that can look like, explaining, "My previous role as an engineer allowed me to bring real-world examples into the classroom. When students ask why certain concepts matter, I share how I used those skills daily in my career." For instance, teachers who have used the engineering design process and system design life cycle regularly in work settings themselves can better explain why those processes are valuable when students ask why they're learning about them. Another teacher shared that all of their "project-based learning projects were inspired by my previous STEM workforce experience," and included exploring real-world examples like rocket propulsion systems and hydroponics on the International Space Station.

A third teacher told us how they were able to draw connections between math, art, biology and technology by using spiderwebs as an example in a biotechnology lesson that he said brought "fascination and wonder to the class" and resulted in students continuing to research the subject after the lesson.

EnCorps Teacher Survey Results: Perceived Student Impact

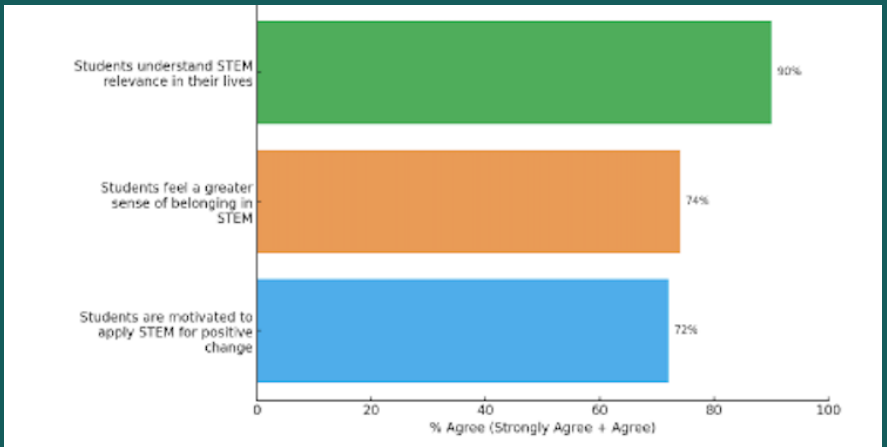
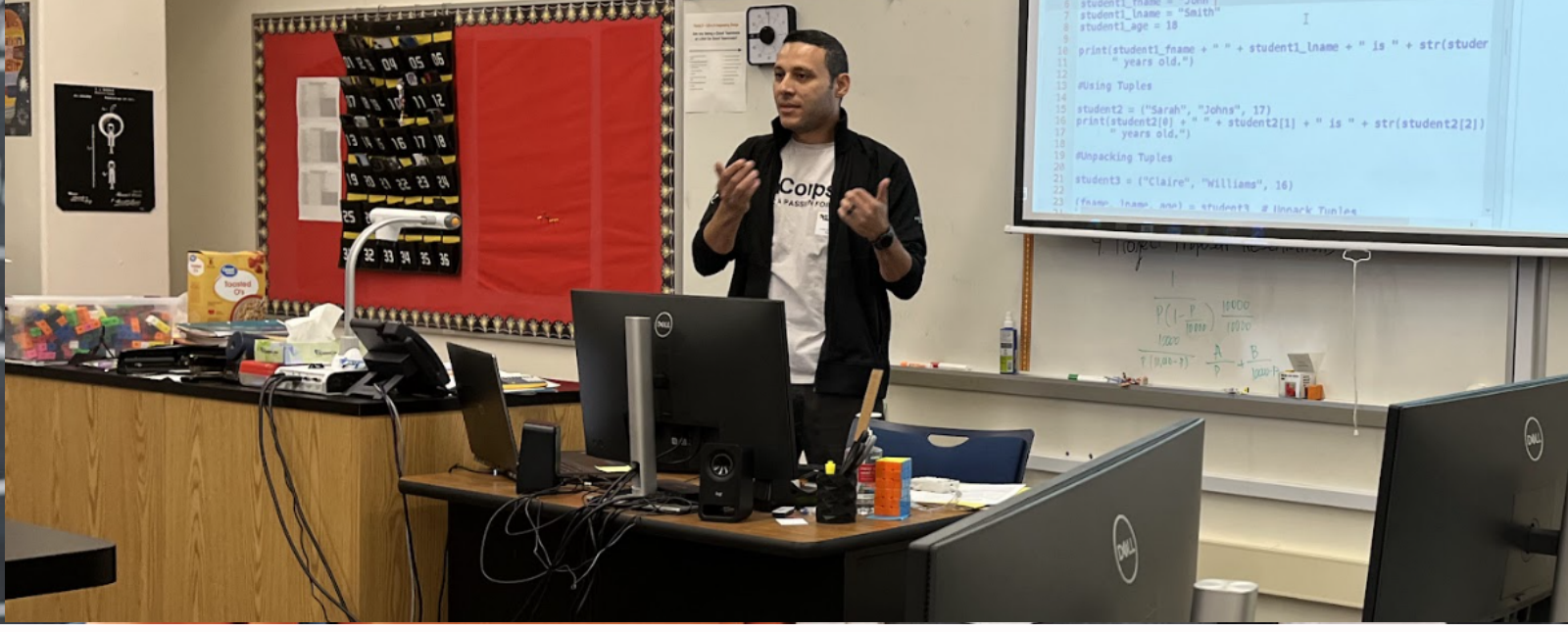


Figure 2: Teacher Perceptions of Student Impact. This chart displays EnCorps teacher survey results highlighting the extent to which teachers agree with statements around student impact. Percentages represent the proportion of teachers who selected "Agree" or "Strongly Agree"

It's clear in all these examples that connecting a real world STEM concept to students' everyday experiences brings the subject to life and provides different sorts of inroads for their genuine interest and engagement. Most EnCorps STEM Teachers report seeing this sort of effect on their students, with 90% agreeing that students have a greater understanding of the relevance of STEM in their lives after having been in their classrooms.

As one teacher put it, "I've seen my students' engagement skyrocket since introducing project-based learning drawn from my experience in the field. They appreciate how STEM is not just theory but something they can touch and see in their future careers."

Many EnCorps STEM Teachers feel similarly, with 74% of them agreeing that their students have a greater sense of belonging in STEM fields .



Some teachers also shared examples of preparing students for potential STEM careers in the ways they run their classrooms, including through giving students open-ended feedback similar to that which professional engineers might receive-a practice that prepares students for any future workforce and also encourages creative thinking and deeper engagement with class material.

Principals Agree: Teachers with Industry Experience Benefit Student Learning

Speaking to school principals confirms the positive impact of bringing real-world experience into the classroom. In a survey of principals at the schools where EnCorps Teachers work, principals agreed that EnCorps teachers' industry experience helps make STEM concepts more relevant and engaging, and that their practical knowledge and skills contribute to their adoption of innovative and effective teaching methods. Another point that emerged from the principals' feedback was that this impact is also often bolstered by the genuine enthusiasm and interest EnCorps Teachers have for their subject. "I believe that Dr. Russo's professional experience adds to the learning experience for her students because she has practical experience with the processes that she teaches. She is incredibly fluent and has a genuine love and enthusiasm for her subject matter."

The combination of knowledge, enthusiasm, and creativity that former STEM professionals can bring with them into the classroom creates a firm foundation for them to develop strong teaching practices and create engaging learning environments. Creative, project-based learning opportunities and real-world applications of key concepts help students see the relevance of STEM in their own lives-and how they too have a place in STEM industries.

Preparation, Exposure, and Support: The EnCorps Approach

EnCorps' STEM Teachers' high confidence is due not only to their previous career experiences but also to their experience going through the EnCorps STEM Teachers Program®.

98% of EnCorps Teachers agree that the EnCorps STEM Teachers Program® helped prepare them to become teachers , and 97% agree they are well-prepared to teach STEM subjects . Bob Capriles' journey with EnCorps exemplifies the impact the program can have.

> Bob Capriles (or Mr. Bob, as his students know him) is an EnCorps Fellow based in the Bay Area who joined the 2011 EnCorps Fellow cohort, began teaching in 2012, and is still teaching today, as a Math & Engineering Teacher at Fremont High School in Sunnyvale, California.
>
> Before his career pivot, Bob had followed his father's footsteps into the tech industry, earning a bachelor's degree in computer science and electrical engineering and going on to build a successful tech career. After 20 years, however, Bob decided he was ready for a change. He had uncovered a passion for teaching while tutoring his son in math during a lengthy school absence, and was interested and curious about following that passion...and then he found EnCorps.

By January of 2012, Bob had begun teaching at Fremont High, and by 2013 he was credentialed. In the 12 years since, he has become a cherished member of the school community. His fellow teachers describe him as bringing "a rare and meaningful blend of industry knowledge and deep compassion to the classroom" and a mentor on their own educator journeys. Says Christian, one of his colleagues and mentees, "I am a better educator because of his support."

Christian isn't alone — Bob has remained deeply involved with EnCorps, and regularly hosts new EnCorps Fellows in his classroom. T o date, his generous mentoring and support have helped nearly a dozen Fellows pursue STEM classroom teaching. For Bob, this is a reciprocal relationship—he described EnCorps as a "trusted guide and advisor on my continuing journey as an educator," and told us "EnCorps has been that constant in the variable world of education."

Bob's experience with EnCorps is deep and powerful, and of course, unique to him. But the specifics of his story contribute to the larger story of EnCorps and the potential and power of this approach to finding and fostering new teachers.

EnCorps begins with a thoughtful recruitment process, seeking industry professionals who have a genuine interest in teaching and applying their previous STEM experience in a new-to-them context. The application process is also designed to select for potential teachers who demonstrate commitment to this career transition and who are likely to stay in the teaching field. Once accepted as Fellows into the program, fit and preparation are further solidified by the onboarding process.

EnCorps Teacher Fellows receive in-depth orientation and onboarding, including access to 120 hours of professional development through Google Classroom to acclimate and prepare them for the experience of teaching, as well as ongoing support from a dedicated staff member. A particularly important and impactful element of the program is the Volunteer Guest Teaching experience, which all Fellows must complete.

Actual Hands-on Classroom Experience: Volunteer Guest Teaching

Volunteer Guest Teaching is a 10-week program where EnCorps Fellows spend 2 hours a week volunteering in the classroom. Fellows are placed at a host school and support an experienced teacher in the classroom, which provides them with practical experience working with students and within a school, and allows them to understand in a very real way whether teaching is a good fit for them. If it is, and if Fellows choose to pursue credentialing to become professional educators, the experience also provides good material for future job interviews. Additionally-and importantly-Fellows provide additional expertise and attention for students, making them, even as volunteers, a powerful resource for students and their learning.

In addition to valuable hands-on experience in the classroom, guest teaching provides Fellows with connection and support. Over the 10 weeks, Fellows work in close partnership with their host teacher, school administrators, and their EnCorps coordinator to ensure they feel adequately prepared to work with students. All of this is supplemented by the professional development resources in the EnCorps training materials, which help build and sustain Fellows' confidence as educators.

Support from EnCorps continues for Fellows who choose to pursue credentialing, including through conversations and guidance about the various pathways available to earning credentials, as well as resources to launch a successful search for a teaching job.

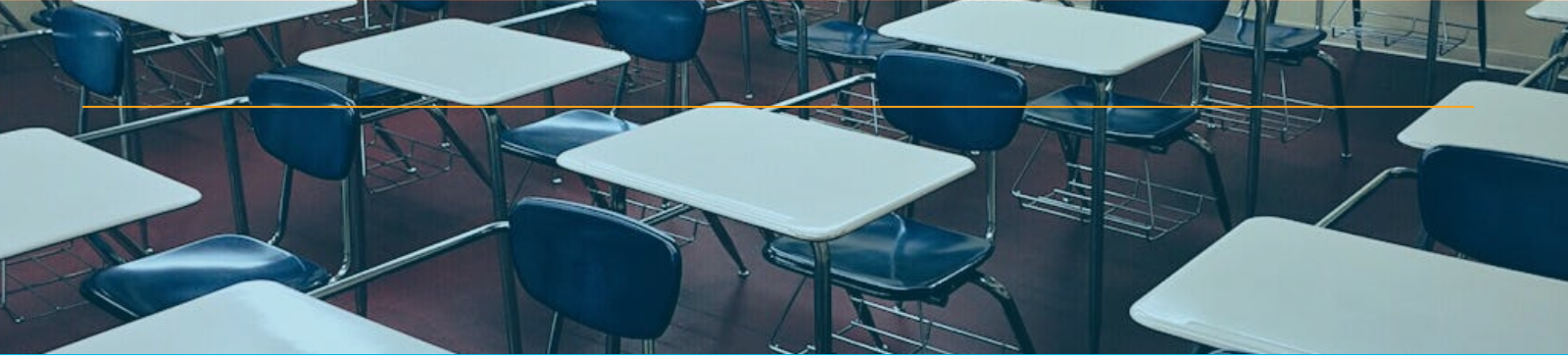
The impact of this multi-stage support is telling **97% of EnCorps STEM Teachers feel confident in their teaching abilities** . Plus, the experience of participating in the program helps build a sustained sense of belonging: **92% are happy working in the teaching profession . EnCorps teachers told us that this is in part because the career transition feels good and meaningful.** "Being in the classroom feels natural. I know that I am making a difference, especially in guiding students who may have never considered STEM."

Others report feelings of fulfillment that emerge from their new professional network. "I feel recognized not just by my students but by my peers and administrators, which fuels my passion to continue teaching. It's fulfilling to know I am part of a solution to the STEM teacher shortage.' Many EnCorps Teachers agree, with **85% saying they believe they are contributing to ending the STEM teacher shortage especially for those most excluded , from STEM opportunities.**

Critically, to that issue of the STEM teacher shortage, EnCorps Teachers are staying in the field. More than **80% of teachers who have completed the program are still teaching 5 years later** , compared to the 44% of new teachers joining the sector from other entry points.

An EnCorps Teacher told us 'The support I received at the very beginning of my teaching career gave me a sense of belonging, especially when I felt that maybe teaching wasn't a career for me.' She had spent 17 years in the STEM industry when she joined EnCorps-and she just celebrated her 10th year of teaching.

The EnCorps STEM Teachers Program® provides potential teachers with experience, training, and support to become new teachers, and that experience builds their confidence and skills so powerfully that they continue to teach for years.



Conclusion

To address national underperformance in science and math, we need more qualified and committed STEM educators. To find those educators, we must seek new or under-tapped talent pools and then support those potential teachers with robust training, practical exposure, and support to successfully make the transition into classrooms. The support required for this successful recruitment, preparation, and retention is substantial - but so are the benefits. EnCorps' model and data demonstrate that professional industry experience helps teachers communicate their STEM subjects more effectively by bringing material to life through real-world examples, practical connections, and genuine enthusiasm for the content they teach. Vetting candidates for potential fit and depth of commitment early in the process and then providing extended practical experience in the classroom allows qualified industry professionals a thorough exploration of the teaching field, and what it means to be a teacher in the 21st century.

Our students were falling behind before 2020, and they fell further behind during the COVID-19 pandemic. Now, they are recovering learning losses at unequal rates, with students in under-resourced communities and students of color remaining further behind. These students would benefit enormously by having qualified, committed STEM educators guiding them through the material, and showing them, in engaging ways, how STEM is part of their daily lives-and how they belong in STEM's future workforce.

EnCorps has been innovating in this space for 18 years, recruiting educators from industry and supporting them through an entire career transition, and, demonstrably, it's an approach that works.

To learn more about EnCorps and our program offerings for individuals as well as schools and school districts, please visit encorps.org or contact us at info@encorps.org.

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