

# CHARTING A PATH FOR THOSE WHO DREAM TO TEACH

Expanding Preparation  
Pathways and Supports  
for Aspiring Teachers



# TABLE OF CONTENTS

|                                                                         |    |
|-------------------------------------------------------------------------|----|
| Executive Summary                                                       | 3  |
| Introduction                                                            | 7  |
| The Backdrop of Dream to Teach                                          | 9  |
| The Dream to Teach Vision                                               | 12 |
| Our Process                                                             | 15 |
| State of the Teacher Preparation Field:<br>Challenges and Opportunities | 17 |
| Recommendations and a Call to Action                                    | 38 |
| Conclusion                                                              | 48 |
| Credits                                                                 | 49 |
| Bibliography                                                            | 51 |





Teaching often begins with a dream – a dream to do something transformative for children, for society, and for the future.

## EXECUTIVE SUMMARY

For STEM teachers in particular, this dream extends to preparing students to tackle the pressing challenges of our time, from medicine to the environment to technology. Yet the path from dreaming to the classroom is far from simple. Over the past decade, enrollment and completion in teacher preparation programs have declined sharply, with only about one in four candidates completing their program despite strong interest in teaching. At the same time, nearly one million paraprofessionals and school-based staff serve as an untapped source of future teachers. These two groups, current candidates and school-adjacent professionals, already dream to teach, but they need the pathways and supports that make it possible.

Informed by our extensive “Getting Smart” research phase and our work with the [Brain Trust](#) advisory, Beyond100K’s new *Dream to Teach* initiative calls on universities, research institutions, districts, nonprofits, and policymakers to unlock this hidden potential, building sustainable, supported pipelines into the teaching profession. Together, we will transform how the nation cultivates and empowers the

next generation of educators, ensuring that those who dream to teach can reach the classroom, where they will, in turn, inspire their students to pursue their own dreams.

# The Current Landscape of Teacher Preparation

Teacher preparation programs remain deeply uneven in quality and accessibility. Research shows that high-quality preparation is grounded in strong coursework, culturally responsive teaching, robust mentorship, and cohesive clinical experiences. Preparation programs that include these components have well-documented impacts on teacher retention and effectiveness. Yet inconsistent program design, the rapid expansion of pathways, and an urgency to fill vacancies have produced wide variation across programs and geographies. Financial strain is another major barrier to a robust and representative pipeline. Aspiring teachers shoulder high tuition costs, licensure fees, and unpaid clinical experiences that deter many from completing programs or entering the field of teaching. These burdens fall hardest on candidates of color and nontraditional students, worsening inequities across the pipeline.

At the same time, teacher preparation systems are evolving in important ways. The proliferation of new pathways, such as residencies, Grow Your Own (also called GYO) initiatives, and Registered Teacher Apprenticeships, reflects an increasingly flexible and responsive approach to building a sustainable teacher workforce. Traditional pathways, too, are innovating to improve both quality and access. These models reduce financial barriers through paid “earn while you learn” options, align with local workforce needs, prioritize clinical experience, and often demonstrate promising retention and diversity outcomes. However, their success is limited by unstable funding streams and insufficient research on long-term impact.

Finally, aspiring teachers struggle to persist without robust supports. Candidates who experience belonging, strong mentorship, and tangible well-being supports, such as childcare stipends, mental health services, and transportation aid, are far more likely to thrive. Effective, culturally responsive mentors create pathways not only to competence but also to identity affirmation and confidence, particularly for teachers of color.

## Recommendations for Action

Within this landscape of both challenge and possibility, the *Dream to Teach* initiative will mobilize the field towards a vision where pathways into teaching are sustainable, accessible, inclusive, and consistently of excellent quality. The recommendations below are co-created with our [Brain Trust](#) of field leaders and highlight the levers we see as most critical to expanding and strengthening the teacher pipeline.



## 1. Invest boldly in high-impact teacher preparation pathways to ensure long-term sustainability and affordability.

Paid clinical models such as residencies, apprenticeships, and Grow Your Own programs can transform access and quality, yet sustainability remains elusive. Stable, recurring public investment, akin to medical residencies, must replace short-term grants or purely philanthropic support. Programs like the National Science Foundation's [Noyce Scholarships](#) and [New Mexico's funding of teacher residencies](#) show what durable funding for STEM preparation can look like.

---

## 2. Ensure every candidate experiences supports that foster belonging and success.

Holistic supports should be considered a core component of preparation, not a luxury. Programs that integrate well-being, academic, and financial supports, such as the [Nashville Teacher Residency's](#) wraparound supports and [WGU's](#) depth and breadth of financial aid, demonstrate the outsized effects of small, consistent investments in student persistence.

---

## 3. Make culturally responsive mentorship a pillar of every program.

Mentorship that affirms identity and fosters belonging is one of the strongest predictors of teacher effectiveness and retention. Networks must professionalize and fund mentorship roles while developing shared frameworks rooted in cultural responsiveness, like those modeled by [EnCorps](#), [City Teaching Alliance](#), and the [Center for Black Educator Development](#).

---

## 4. Band together to spread effective preparation models.

Collective learning and knowledge-sharing networks can move bright spots from isolated sites to systemwide adoption. Beyond100K was founded on the belief that we solve our greatest challenges together, and our network is poised to lead this work in partnership with initiatives across the field, such as [Deans for Impact](#), the [Pathways Alliance](#), and the NSF-funded [Teacher Preparation for Rural STEM Teacher Persistence and Retention](#), that illustrate the power of coalescing around evidence and data to support and scale quality.

---

## 5. Prioritize research on pathway effectiveness and candidate retention.

Emerging models, particularly apprenticeships, demand rigorous research. Coordinated, longitudinal studies should document outcomes to identify which design elements drive retention, effectiveness, and diversity. Research partnerships like [New America's Grow Your Own Research Agenda](#) and Beyond100K's [Brain Trust model](#) lay the groundwork for this evidence base.

---

## 6. Prepare teachers to use emerging technology and partner with the STEM industry to inspire and develop the next generation of future-ready STEM leaders.

As the STEM workforce evolves, preparation programs must equip teachers to integrate emerging technologies, model responsible AI use, and connect students to evolving career pathways. Efforts like [Colorado's Teacher Externship Program](#) underscore the value of educator-industry partnerships that strengthen relevance and innovation in teaching.

---

## 7. Create the conditions that allow more people to dream to teach.

Expanding recruitment pipelines requires changing the narrative about teaching's prestige and promise. Programs such as [UTeach](#), [EnCorps](#), and [Arizona State University's paraprofessional-to-teacher initiatives](#) prove that tapping school-adjacent talent and STEM students and professionals grows the pool of future educators. Strategic data systems must accompany recruitment efforts to ensure equity and precision in meeting teacher workforce needs.

---

The *Dream to Teach* initiative charts a path to solve the teacher shortage with equity, quality, and community at its core. Achieving its vision means normalizing paid, high-quality preparation; embedding mentorship and belonging in every program; prioritizing bold investment and thoughtful research; and inspiring the next generation to see teaching as a pathway of purpose and leadership. The recommendations outlined here position the field to convert aspiration into action, ensuring that all who dream to teach have the opportunity, support, and sustainability to thrive, thus enabling them to, in turn, unleash the potential of our future leaders and innovators.





# INTRODUCTION

Teaching often begins with a dream. A dream to do something transformative for children, for society, and for the future. A dream to make a difference by spending each day in the company of young people, shaping identities, sparking curiosity, and laying the foundations for lives of meaning. For many, the dream begins in the joy of imparting knowledge, the privilege of nurturing voices that might otherwise go unheard, and the honor of creating classrooms where every student feels a sense of belonging. It is the dream of surrounding oneself with the humor, optimism, and awe of youth, and of returning that gift by inspiring confidence, competence, curiosity, and joy.

For STEM teachers in particular, teaching also carries the opportunity to prepare students to tackle the pressing challenges of our time, across medicine, the environment, and technology. These aspirations remind us that teaching is a profession that offers [practical and professional fulfillment](#) alongside the power to transform individual lives and the collective future.

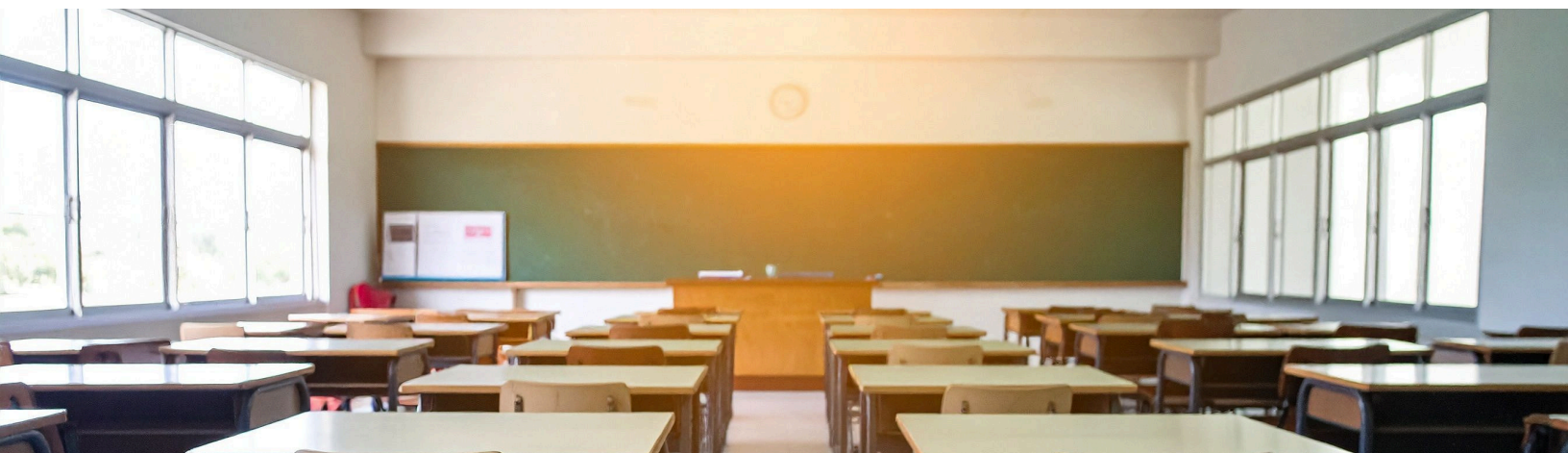
Many talented individuals dream to teach. Yet the path from aspiration to classroom is far from simple. It requires more than lofty ideals; it requires sustainable, supportive pathways that make teaching possible. Too many people experience impediments or barriers or the lack of supports when they're most needed which, in total, cause [75% of those who enroll in teacher preparation programs not to graduate with a teaching certificate](#) and over a million people in teacher-adjacent roles to never have the opportunity to become teachers of record. While this report outlines the challenges in detail, we begin first with possibility: the dream that motivates so many to step forward.

# 75%

of those who enroll in teacher preparation programs do not graduate with a teaching certificate

It is this sense of possibility that undergirds [Beyond100K](#)'s *Dream to Teach* initiative, a networked effort to support teacher preparation programs, universities, and aligned organizations in collectively cultivating and mobilizing untapped talent, while expanding sustainable pathways into the profession. This includes both the teacher preparation candidates who need stronger supports to persist and the millions of school-adjacent staff, such as paraprofessionals, whose deep commitment to students and local communities makes them an essential but underutilized asset for the teaching workforce.

This report serves as the launchpad for the *Dream to Teach* initiative. In the pages that follow, we provide context on the problems this initiative seeks to address, along with a synthesis of the state of teacher preparation shaped by our [Brain Trust](#) of field leaders. We highlight not only the challenges but especially the promising solutions emerging from within our network and across the field, to support collective learning and the spread of effective practices. We conclude with recommendations for action, designed to maximize the potential of those who dream to teach and, in doing so, to unleash the unlimited potential of our country's young minds.



# THE BACKDROP OF DREAM TO TEACH

The teacher shortage is not a new problem; it is a crisis with [deep systemic roots](#). Despite decades of recruitment efforts and the dedication of many organizations, shortages persist, [especially in the hardest-to-staff STEM areas](#). The impact of this crisis is [greatest in schools serving Black, Latinx, and Indigenous communities as well as schools in rural and low-income communities](#), where access to qualified STEM teachers is most limited, even as these subjects drive economic opportunity and social mobility in our tech-centered economy.

Although public school students are increasingly diverse, the teacher workforce remains [predominantly female and predominantly White](#). The gap is sharper in STEM, [where teachers of color represent less than 10% of STEM or CTE teachers](#). The research is clear that [teacher diversity matters](#) for all students, particularly students of color, and can lead to increased academic achievement, advanced course-taking, reduced discipline incidents, improved attendance, and increased rates of high school graduation and college enrollment and completion rates.



| Race/Ethnicity*               | % of All PK-12 Teachers | % of Elementary** Teachers | % of Secondary*** STEM Teachers | % of CTE Teachers | % of Public School Students |
|-------------------------------|-------------------------|----------------------------|---------------------------------|-------------------|-----------------------------|
| White                         | 79.9%                   | 71.7%                      | 77-80%                          | 87%               | 44%                         |
| Black or African American     | 6.1%                    | 9.4%                       | 7-9%                            | 8%                | 15%                         |
| Hispanic or Latino            | 9.4%                    | 11.6%                      | 8%                              | 6.9%              | 29%                         |
| Asian                         | 2.6%                    | 3.1%                       | 4-6%                            | 1.3%              | 5%                          |
| American Indian/Alaska Native | 0.4%                    | 0.5%                       | <1%                             | 1%                | 1%                          |
| Other/Multicultural           |                         | 3.6%                       | 2%                              | 2.7%              | 5%                          |

### Sources:

<https://nces.nsf.gov/pubs/nsb2021/table/K12-4> (SY2017-2018)

<https://ir.library.illinoisstate.edu/cgi/viewcontent.cgi?article=1485&context=jste> (2019)

[Evaluating and improving teacher preparation programs](#) (SY2021-2022)

<https://usafacts.org/articles/who-are-the-nations-teachers/> (2022)

<https://nces.ed.gov/programs/coe/indicator/cge/racial-ethnic-enrollment> (2022)

[https://nces.ed.gov/surveys/ntps/estable/table/ntps/ntps2021\\_7182a\\_t12n](https://nces.ed.gov/surveys/ntps/estable/table/ntps/ntps2021_7182a_t12n) (2020-2021)

\*Race and ethnicity categories are federal reporting categories

\*\*Elementary includes PK

\*\*\*Secondary is defined by NPTS as middle and high school, grades no lower than 4

Ending the STEM teacher shortage with equity, representation, and belonging is Beyond100K's charge. For over a decade, Beyond100K has served as a national hub or "field catalyst" for systemic progress on the teacher shortage, especially in the high-need STEM subject areas, mobilizing hundreds of organizations to achieve what no single entity could accomplish on its own. Since 2023 alone, our 200+ partners have prepared 33,000 STEM teachers and supported nearly 120,000 more, impacting as many as 11 million students nationwide.

Beyond100K's approach is to rally the field around the most high-leverage "keystone challenges," those that, if addressed, have the greatest potential to catalyze change. Several of these challenges, outlined in our [STEM Belonging and Success Map](#), sit squarely within teacher preparation, including:

1. The cumbersome and numerous requirements to become a teacher can prevent people from pursuing STEM teaching.
2. There can be insufficient compensation (including salaries and bonuses) to attract people to enter or stay in the STEM teaching profession, especially over other STEM industries.
3. The financial burden of becoming a teacher (including the cost of preparation programs, limited scholarships and loan forgiveness, feasibility of paying off loans on a teacher salary, and lost earnings from not working) can deter people from teaching or compel people to choose less-expensive and often less effective preparation pathways.
4. In response to acute STEM teacher shortages, states and districts are increasingly waiving degree and certification requirements – addressing urgency in the short term but risking long-term declines in teacher quality, preparedness, and equity.
5. There is not consensus about what constitutes effective teacher preparation (or how it factors into state approval of preparation programs).
6. Preparation program faculty can fail to model joyful, relevant, and rigorous STEM instructional strategies.
7. States and districts can lack sufficient data or data systems to understand current or predict future teacher shortages.

In the face of these challenges, the field of teacher preparation is struggling to attract, prepare, and retain enough qualified candidates. The result is a workforce pipeline that falls short of meeting both the scale and diversity of our nation's needs, [leaving too many students who could be contributing their genius to our economy and future on the sidelines.](#)

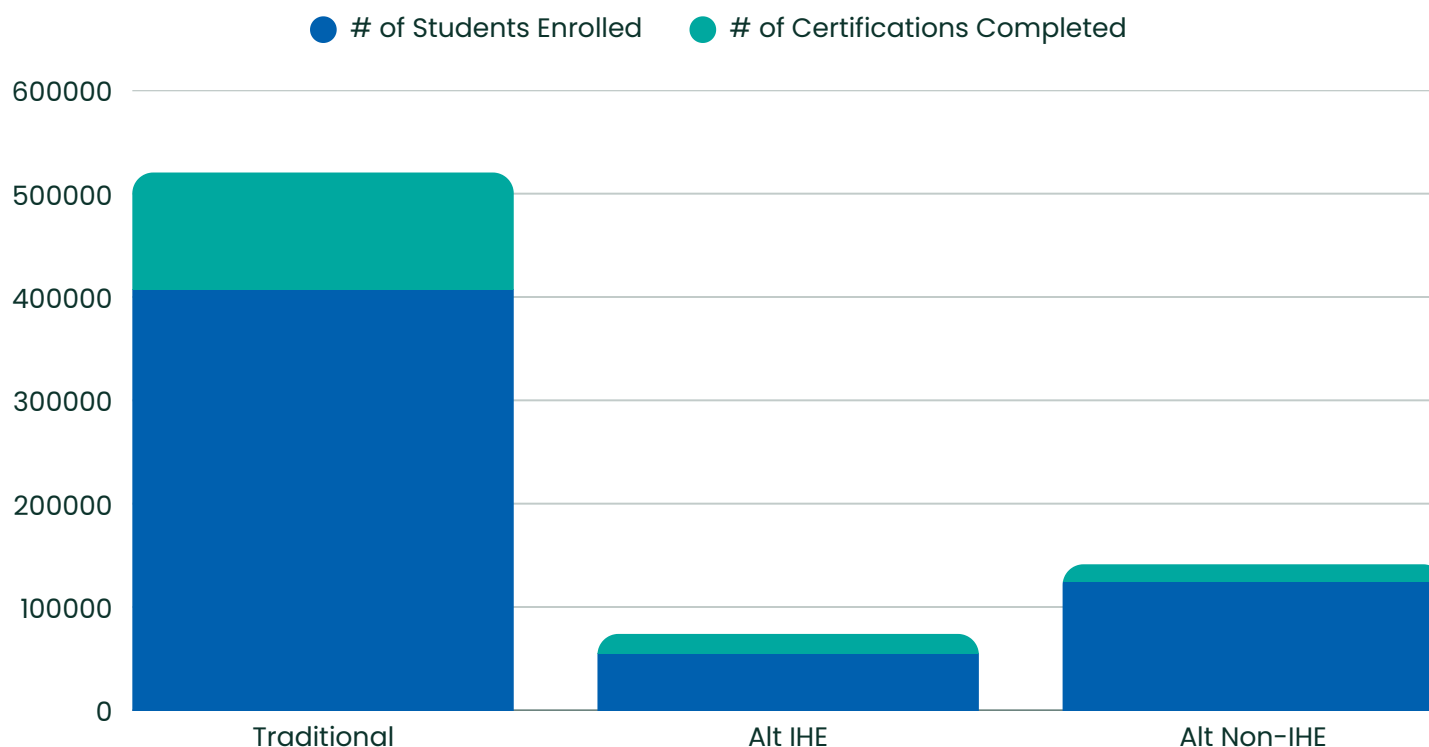


## THE DREAM TO TEACH VISION

Digging deeper into the data reveals that over the past decade, enrollment and completion in teacher preparation programs have declined significantly, with only modest recovery in recent years. According to the [2024 ESEA Title II Report](#), which provides information on how state and local educational agencies use federal funds to improve educator quality and effectiveness, **only about 25% of teacher preparation candidates completed their programs in 2022-23**, despite strong interest in teaching. That is, of the 586,805 people enrolled in teacher preparation programs in 2022-3, only 148,931 completed their programs. Trends vary substantially [by state and program type](#); some states have seen sharp declines in traditional programs while others have experienced growth, particularly through alternative route programs. [Alternative pathways](#) are also contributing to increases in the racial and ethnic diversity of teacher candidates, though some come with lower completion rates and variable quality.



## Title II 2022–2023: Enrolled vs. Certifications Completed by Pathway



Source: U.S. Department of Education. (n.d.). [Title II Higher Education Act: Reports on teacher preparation and certification.](#)

At the same time, many paraprofessionals, after-school educators, and other school-based staff represent a committed and growing segment of the workforce, with deep relationships with students and communities. Paraprofessionals represent one of the [largest and fastest-growing types of employees](#) in public schools, with 900,000 employed full-time in US public schools at the start of the 2019 school year. While more research is needed, and as the field continues to grapple with the effectiveness of preparing paraprofessionals for STEM teaching in particular, [existing studies suggest that this population may have higher retention rates than other types of candidates](#). Yet, as a system, we have not sufficiently tapped their talent as a source for teachers. Expanding access to the profession for these educators is a powerful opportunity to strengthen both the size and diversity of the teacher workforce.

**These two communities — current preparation candidates and school-adjacent professionals — already "dream to teach."** Beyond100K's network of over 200 partner organizations across nonprofits, universities, school districts, and policy makers is launching its *Dream to Teach* initiative to unlock hidden talent and expand sustainable pathways to the teaching profession for aspiring educators whose progress has been blocked by systemic barriers — not by a lack of talent or commitment.

With this effort, the Beyond100K network will leverage the power of collaboration to transform how hundreds of organizations expand the teacher pipeline, especially in STEM. The teachers who emerge from these pathways will, in turn, inspire and prepare their students to thrive, so that our young people can contribute to our communities, fuel our growing economy, and fulfill their dreams.

# Alexis' Pathway to Teaching

Story shared through Beyond100K's [UnCommission](#).



**Alexis**

— She/her, NY, Age 25 (2021)

"I was not actually someone who was super interested in science, technology, engineering, and math. I was asked by one of my own high school teachers who taught woodworking at the time, if I would join his class in exchange for a sticker. Me being the young kid that I was, I was super excited. So I joined his class, and I ended up absolutely falling in love with the content. When we were in the class, we were able to use

math in a real-life setting. It was the first time in my life, that I could actually see a physical representation of my work come together. It was from that point on, that I decided that I would want to go to school to be a technology education teacher.

I applied to a school in upstate New York...I was completely and utterly unaware when I got to the program, that I was going to be the only person of color, and one of three females actually enrolled in the program...Soon after that, I ended up going into my student teaching. And that's where I realized that it was extremely important for me not to leave, not because it was easy by any stretch of the imagination, not because it was convenient. But because I looked back on my life at that time, and I realized that I wanted to leave so badly because I didn't see anybody else like me.

I realized that that must be my role moving forward and becoming an educator – if there were no seats at the table for me, I'm going to make sure that I create the seats for my children moving forward. I ended up graduating, and I did become a teacher, which I think paid off tenfold to be a technology and education teacher of color, because it is the moments that melt my heart where I have my students tell me, oh my goodness, Miss Williams, I'm so happy that you're here. You know, your hair looks just like mine...or, you know, Miss Williams, I've never seen a teacher like you, you actually get us, you understand us."



## OUR PROCESS

The *Dream to Teach* strategy begins with a deliberate “getting smart” phase designed to ground the work in research, data, and field insight. This phase ensures our report reflects both a clear-eyed understanding of the challenges facing teacher preparation and the practical wisdom of those closest to the work. This report is the culmination and translation of this intentional learning phase of our work.

Our learning process utilizes three research methodologies and integrates them to create a report that, we hope, synergizes the strengths of each approach and mitigates any potential downsides. The report reflects an intensive and comprehensive review of the existing academic literature to foreground relevant research, human-centered discovery interviews to better lift up and illuminate the experiences of current and prospective teachers and field leaders, and the contributions of a Brain Trust that brought diverse experiences and expertise to bear on the entire enterprise:

### 1. LITERATURE REVIEW

We synthesized findings from [more than 50 studies and reports on teacher preparation](#), compiled by Beyond100K staff, expert advisors, and practitioners. This review provided a baseline of current trends, promising practices, and structural challenges in developing a robust, representative, and high-quality teacher pipeline.

---



## 2. DISCOVERY INTERVIEWS

We conducted over 20 interviews with educators and leaders to gather on-the-ground wisdom and feedback on the current state of the field, with particular attention to our network’s keystone challenges related to teacher preparation. Interviewees included teacher preparation faculty across various pathways, policy leaders, school leaders, teachers, and community organization stakeholders.

---

## 3. BRAIN TRUST

We convened a [Brain Trust](#) of [24 practitioners, researchers, program leaders, and community stakeholders](#). This group served as co-authors and advisors, reviewing data, analyzing barriers, spotlighting “bright spots” of effective practice, and developing recommendations for how the network and field can take action. The Brain Trust shaped the findings of this report and ensures that our insights are both rigorous and relevant. Looking ahead, members will act as ambassadors for *Dream to Teach* within our network, sparking connections and advancing field-wide learning and action.

---

The sections that follow include the result of this intentional, collaborative, participatory process to get smart. Our goal is to offer a shared and co-created knowledge base to inform strategic, coordinated action. That is, we want to ensure that as we mobilize as a network, we are grounded in a common, collective understanding of the wisdom, insights, and the existing evidence base of the field. What follows is a summary and synthesis of key themes within the field of teacher preparation, uplifting challenges, solutions, and promising practices that can serve as “bright spots” for others to learn from and apply to their work. From this synthesis, we propose recommendations and action steps that can be taken up within our network and by the field at large, to support, sustain, and expand the dream to teach.



# STATE OF THE TEACHER PREPARATION FIELD: CHALLENGES & OPPORTUNITIES

This section synthesizes across our literature review and discovery interviews with Brain Trust members to provide a summary of the state of the field of teacher preparation. Our research process was guided by three primary questions:

1. What are the current research, practice, and policy trends related to creating a robust and representative teacher pipeline that consistently exemplifies high-quality teacher preparation?
2. Where is innovation or progress happening?
3. Where are there gaps or opportunities to advance our most highest-leverage challenges in the field of teacher preparation?

When we listened to educators, leaders, and teacher prep providers, four themes rose to the surface. The challenges are real: many programs still offer uneven preparation, and financial barriers prevent too many aspiring teachers — particularly those from underrepresented groups — from reaching the classroom. But we also heard about what's working: new pathways that open doors, and programs that provide the academic, emotional, and financial supports that help candidates thrive. And, we heard that teacher preparation must evolve to meet the demands of a rapidly changing world, one that requires educators to be adaptive, equity-minded, and deeply connected to community and workforce needs and lean in to cross-sector collaboration. The challenges raised in this report are not just problems to solve; they are opportunities to reimagine the field of education's purpose and impact. The sections that follow bring these themes to life, spotlighting bright spots and innovations that point toward a stronger, more inclusive future for teacher preparation.

# Sarah's Pathway to Teaching

*Story shared in Beyond100K  
Dream to Teach Empathy  
Interviews*

"I am a new teacher. I'm starting my third year at West High School here in Wichita. My degree in teaching, though, has always kind of been like the plan B that was in the back of my head because my family is all educators. I finally decided, after [getting my biology degree and] about 10 years of trying to do lots of other things, that I should join the family business because I'm good at it, and I enjoy it.

I was a para for a year to learn, to see if I liked being on the school calendar, if I liked being in the classroom. There is so much that is valuable in that experience because it taught me to see

different classroom management styles, to see how different teachers access resources, what resources they use, and just to get a feel for what kids are like now, because the world has changed so much. And that's the one thing that I wish, like when I look at teacher preparation programs, I wish that they had more of that kind of like clinical side of things where they spent more time in classrooms, because that's one thing I had lots of background in and lots of preparation in that has made my transition into being a teacher so much easier. What I think definitely made my experience easier...is our district has a program called Peer consultants, and what they are is people who have been in the classroom teaching the level that you're teaching. For instance, my peer consultant was a middle school and high school math teacher. Peer consultants' entire job is to have a caseload of first and second-

year teachers where they're in one of your classes every week, either observing or coming to chat with you about classroom management, about lesson planning. Sometimes, if you just need to chat about what is hard about being a teacher, and to bounce ideas off of. It's an amazing program that I know is unique to the district that I work in because it is so big. But I really wish that the districts around here could provide that because having somebody who I don't have to go and like talk to them on their plan time, and they're not a teacher who's managing their own caseload. Like her entire job was to not only help me but the other first-year teachers on her caseload learn how to be better teachers...Having that just there to help me answer questions was so helpful."

— **Sarah** She/her, KS  
(2025)



# High-Quality Teacher Preparation Is Critical Yet Variable

While we know that high-quality preparation is essential for preparing effective teachers who stay in the profession, the way it is implemented varies considerably across and within geographies and programs. This challenge compounds as pathways and programs expand to address teacher shortages. On an optimistic note, substantial research outlines a coherent set of features that define high-quality preparation, including well-designed clinical experiences, mentorship that fosters both belonging and competence in the classroom, and culturally responsive and practice-based curriculum delivered by strong, equity-minded faculty. Importantly, Beyond100K's [STEM Belonging and Success Map](#) highlights that the field would benefit from a clearer consensus, awareness, and shared articulation around this body of knowledge, and there is certainly still a need for even greater clarity and evolution on understanding what makes preparation maximally effective. That said, there is a significant opportunity for the field to rally around and reliably spread the components that we know are crucial. The insights that follow flesh out this theme, with supporting evidence from the research base.



**High-quality teacher preparation impacts early-career effectiveness and retention.**

Research clearly documents that teachers who receive comprehensive, well-structured preparation, especially with strong clinical experiences and mentorship from highly effective teachers, are more likely to feel prepared, teach effectively, and remain in the profession. Preparation quality (elaborated upon in the next section) is a key driver of both teacher and student success.

High-quality preparation plays a decisive role in whether teachers remain in the profession. Teacher candidates who experience thorough preparation programs are [two to three times less likely](#) to leave teaching after their first year compared to those with minimal training. Teachers who lack student teaching experience are particularly vulnerable to leaving. They are more than twice as likely to exit the profession in their first year as peers who experience a structured combination of coursework and clinical practice, according to a [comprehensive review](#) of large-scale, quantitative teacher education studies. Additionally, comprehensive preparation leads to teachers [feeling that they are prepared](#) for the job, which significantly lowers teacher burnout and, in turn, increases retention.

Preparation does more than keep teachers in the classroom; it also accelerates their effectiveness. One of the strongest predictors of a new teacher's success is the quality of the mentor they learn from during student teaching. Candidates who train with highly effective mentors or supervising teachers often enter their first year [performing at the level of a second- or third-year teacher](#). The impact of high-quality mentorship has been confirmed across multiple studies and contexts, showing that the instructional quality of cooperating teachers has a [direct, causal impact](#) on the effectiveness of their student teachers.



**The field has a clear, evidence-based understanding of what components constitute high-quality teacher preparation.**

While the field of teacher preparation, as well as the systems for [evaluating its effectiveness](#), continues to evolve and improve, there is [extensive research](#) documenting what constitutes high-quality preparation. Even as there is room to build greater awareness around this body of knowledge to inform more consistent and effective implementation of best practices, it's important to recognize that the field does, in fact, know a good amount about what's most important.

Effective preparation prioritizes quality over quantity of content or field hours and integrates strong, practice-based coursework, culturally responsive clinical experiences, and expert mentorship to build teachers' content knowledge, pedagogical skill, dispositions, and self-efficacy. Developing teachers' [pedagogical content knowledge](#), or the ability to effectively translate discipline-specific knowledge through instruction, is especially important for STEM teachers. Programs that align theory with practice, support diverse candidates, and are led by skilled, equity-minded faculty are most effective at preparing and retaining teachers. Further, high-quality programs explicitly prepare candidates to design classrooms where all students feel seen, valued, and experience a genuine sense of belonging. As our Brain Trust uplifted, ensuring that all teachers, independent of their own identities, are adept at fostering belonging and enacting culturally responsive instructional practice requires continued attention from the field.

Well-designed clinical experiences are particularly important. The most impactful clinical experiences are intentional about the selection, training, and support of mentor teachers, in particular, ensuring that mentors provide [skillful coaching and feedback](#), in addition to modeling effective teaching. Ideally, clinical placement sites should be reflective of diverse student populations and have strong cultures of professional learning to maximize impact. The National Center on Teacher Quality's (NCTQ's) research-backed [Clinical Practice Framework](#) outlines six essential components of strong clinical experiences and is an important resource for the field.

### NCTQ Clinical Practice Framework

1

Strong district-prep program partnerships

4

Student teacher placement sites

2

Student teacher-cooperating teacher matches

5

Student teacher skill development

3

Cooperating teachers and program supervisor training

6

Data and outcomes

Finally, high-quality teacher preparation programs also intentionally foster belonging for aspiring teachers. They are particularly mindful of the importance of this for candidates of color in STEM education, whose experiences of negative, [unsupportive academic environments](#) can deter persistence. Cultivating a sense of belonging is not an add-on. It is foundational to teacher identity, confidence, and

retention. Programs that center community, mentorship, and culturally responsive pedagogy help candidates see themselves as capable, valued members of the profession.



**Teacher preparation quality varies significantly across programs, pathways, and geographies.**

Despite a strong research base on effective practices, teacher preparation in the United States remains highly variable. Aspiring teachers often encounter vastly different experiences depending on their chosen route, institution, or locality. As new pathways proliferate to expand and diversify the teaching workforce, the field notes significant variation in how programs are designed and implemented.

This variability shows up in areas such as the comprehensiveness of both content-focused and pedagogical coursework, the [quality and duration of clinical experiences](#), and the strength of mentoring. Some programs, especially fast-track alternatives, lack essential elements like robust clinical practice or sustained mentorship, leaving new teachers unevenly prepared. [NCTQ's analysis of 550 alternative preparation programs](#) reveals that 62% provide no clinical practice, nor do they prioritize mentorship. Unsurprisingly, many candidates in these programs fail to graduate or earn licensure. [Although enrollment in alternative programs surged 63% since 2010–11, the number of completers in 2022–23 was slightly lower than in 2010–11](#). While promising alternative pathways with research-backed, high-quality preparation practices exist, these statistics emphasize the variance in quality across different types of programs, particularly fast-track models.

Geographic variation further compounds the problem, as state oversight of teacher preparation [differs widely](#). Certification requirements differ in coursework, the length and substance of clinical experiences, and how standards apply across pathways, often shaped by the urgency of addressing teacher shortages. For example, Texas, faced with a large number of uncertified teachers entering through alternative routes, has begun investing in [policy and funding reforms](#) while working to standardize program quality through its “[Effective Preparation Framework](#).”

With the growing number of teacher preparation pathways, maintaining program quality poses a significant challenge, a point underscored by the Brain Trust. The pressure to respond quickly to teacher shortages can sometimes compromise crucial features of preparation, including robust clinical experiences that require substantial time and resources. Our discovery interviews echoed this concern. Ryan Saunders, Director of State Policy at the Learning Policy Institute, noted:

“

**“We have seen a proliferation of pathways into the profession as a response to increasing challenges of retaining teachers and filling vacancies in classrooms...that has unfortunately not always been aligned or consistent with the research on what we know teachers benefit most from when it comes to how to prepare them.”**

— Ryan Saunders, Director of State Policy, Learning Policy Institute

”



If we focus on expanding options with quality, the advent of new pathways in fact presents an important opportunity to create them using what we know works, given that it can be easier to start new programs well than to retrofit and change what isn't yielding results but may already be entrenched.

# Financial barriers undermine a robust and representative teacher pipeline

As Beyond100K learned from [thousands of educators](#) who shared the challenges and opportunities in trying to become teachers, financial burdens deter or prevent many aspiring teachers from entering the profession. Such burdens include the cost of preparation programs, limited scholarships and loan forgiveness, the difficulty of repaying loans on a teacher's salary, and the loss of income from not working. [These barriers also push candidates toward lower-cost pathways that are often less effective.](#) As the insights below detail, our research affirms that addressing financial hurdles is one of the most transformative levers for ensuring aspiring teachers' success and persistence. Importantly, the impact is not felt equally: [candidates of color, nontraditional candidates, and those pursuing high-needs STEM fields experience these burdens most acutely.](#) Even as the field pushes to shift the responsibility for funding teacher preparation from individuals to federal, state, and local systems, the field continues to wrestle with how to sustain that funding in an unpredictable landscape.



**The financial burden of becoming a teacher is a main barrier to entering the profession.**

The pathway into teaching is financially out of reach for too many talented and motivated individuals who dream to teach. Aspiring teachers face [steep financial hurdles](#), starting with rising tuition. The average net price for undergraduate education has climbed nearly 50% over the past two decades, reaching an average of \$19,250 annually for public four-year institutions and \$32,800 yearly for private ones in 2022-23. As a result, [most teachers borrow to enter the profession](#), with education majors taking on debt at especially high rates — about 76% at both the bachelor's and master's levels, compared to 61% and 66% across all majors. More than 60% of full-time public school teachers (roughly 2.1 million) have taken out loans, and about 1.3 million, nearly 40% of all teachers, are still repaying them. On average, education program completers in 2020 owed \$29,250 for a bachelor's degree, \$38,230 for a master's, and \$42,480 for a postbaccalaureate degree. Alarming, more than 1 in 10 teachers still owe their full original balance, and nearly 20% of those over age 61 are still making payments. With average monthly payments of \$342 — well above the typical borrower — [teachers carry a lasting financial burden](#) simply for preparing to enter the classroom.

Additional costs of credentialing further add to this burden. [Licensure exam costs](#) can range from \$100 to \$300 per subject, and [subject area endorsements for high needs STEM fields](#) can reach \$9,000 - \$15,000. These costs are paired with low starting salaries, as [teachers earn about 74% less than other college-educated workers](#), a gap that has grown over the past decades.

# 60%

*of full-time public school teachers have school loans*

# ~1.3M

*teachers are still repaying their loans*

# \$29,250

*average amount owed for teachers with a bachelor's degree in 2020*

Finally, the [historically unpaid nature of clinical practice](#), where aspiring teachers are expected to work for free for months in full-time roles, is a significant barrier and a root cause of systemic inequities. During clinical practice, which often equates to a full-time job, 83% of candidates in [Prepared to Teach's "Aspiring Teachers' Financial Burden Survey"](#) report frequent or very frequent financial stress, with 64% citing living expenses as their greatest source of anxiety. *A majority said they would struggle to cover an unexpected expense of over \$200.* To make ends meet, 61% of respondents reported working during clinical practice, and more than a quarter of those worked 30 or more hours per week, often in jobs unrelated to their studies. Students described working multiple jobs, sacrificing sleep and family commitments, and experiencing significant stress that undermines their ability to focus on teaching. Together, the findings highlight how unpaid clinical practice places aspiring teachers in untenable financial situations that jeopardize both their well-being and the quality of their preparation.



**Financial burdens have a disproportionate impact on candidates of color, non-traditional students, and high-need subject areas.**

The financial barriers to teaching are not experienced equally. Black and Latinx candidates and those from low-income backgrounds are more likely to take on debt and carry it longer. Paraprofessionals, teachers' aides, and other school-adjacent staff who are interested in teaching and who are more racially and linguistically diverse than the current teacher workforce face additional hurdles, including low wages, limited access to coursework, and a lack of paid time off to pursue credentials.

[Debt burdens are notably pronounced for Black teachers, 71% of whom have borrowed and nearly 60% of whom are still repaying loans](#); alarmingly, nearly one-third still owe their full balance — triple the overall rate. [Latinx students](#) typically take on similar loan amounts as white students, but they default at twice the rate, indicating that equivalent debt levels create a heavier financial strain for them. These outsized financial hurdles can prompt candidates, [particularly candidates of color, to enroll in fast-track alternative certification programs](#) that are less rigorous to avoid the financial burdens of clinical practice, undermining the quality of their preparation. When analyzing disparities across subject areas, [special education teachers](#) are the most likely to take out student loans and still owe their full balance, as many pursue advanced degrees after licensure, facing higher costs while teaching in a field with one of the nation's steepest shortages. Taken together, these disparities make it harder for historically underrepresented groups, non-traditional students, and high-needs subject area teachers, especially those in STEM fields, to enter and persist in the profession, further limiting efforts to stabilize and diversify the teacher workforce.



**Field leaders believe teacher preparation should be a public investment, but sustainable funding to make this a long-term reality remains unresolved.**

To counteract the current pipeline challenges, many solutions are emerging to shift the financial burden away from individuals and toward public systems. [Service scholarships](#), [expanded loan forgiveness](#), [state-funded stipends](#) for high-need teaching positions such as those in STEM, and [pathways offering paid clinical practice](#), make teacher preparation more financially sustainable. Registered Apprenticeships, residencies, and many Grow Your Own programs combine paid, practice-based preparation with targeted recruitment of diverse candidates.

A core challenge remains figuring out [how to sustain funding](#) for affordable teacher preparation models, often pieced together from short-term or unstable sources, including expiring federal ESSER funds, inconsistent state appropriations, and time-limited philanthropic grants. This patchwork makes it difficult for programs to plan long-term, sustain core operations, or grow to meet demand, a core problem [the field is trying to solve](#), particularly given a funding landscape that is tumultuous at present.

## Pathways to the classroom are expanding and promising, but are expensive and under-researched

In the face of the challenges outlined above, expanding pathways into teaching represents one of the field's most hopeful and forward-thinking responses to shortages and the need for a stronger, more diverse workforce. Lowering financial barriers while deepening clinical practice is integral to these models; apprenticeships and residencies that offer paid clinical experience through “earn while you learn” approaches are spreading. Grow Your Own approaches that draw talent from within local communities are building opportunities for lasting expertise and commitment. Additionally, traditional and alternative routes are working to continuously improve, innovate, and develop financially sustainable and accessible models for students.

Together, these approaches show real potential to strengthen both access and outcomes. Still, [approaches such as these can be resource-intensive in terms of finances as well as capacity and time](#). Additionally, [many promising pathways like apprenticeships are too new and too lightly studied](#), underscoring the need for greater investment, research, and quality standards to ensure their promise translates into lasting impact.



**Multiple high-quality pathways are essential to meet the needs of diverse candidates and contexts and thus to address teacher shortages and diversify the workforce.**

The landscape of teacher preparation includes a [proliferation of promising preparation pathways](#), including traditional university-based programs and a growing number of non-traditional routes, such as alternative certification, teacher residencies, Registered Teacher Apprenticeships (RTAPs), and Grow Your Own pathways. No single model can meet the varied needs of schools, districts, and candidates. A healthy, sustainable teacher preparation ecosystem requires a variety of pathways, each contributing distinctive strengths and serving different candidate populations.

This diversity of pathways is critical to ensuring access and success for those who dream to teach. The flexible array of multiple pathway types is especially important in the US context, so that programs can be designed to explicitly meet the diverse range of needs of schools, districts, and teacher candidates, who come with different aspirations, life circumstances, and support needs to enable their success.

In conversations with the Brain Trust, Beyond100K partners, and field leaders, we encountered strong, often divergent perspectives on each pathway into teaching. Dialogue about traditional, alternative, residency, apprenticeship, and grow-your-own routes can be spirited—and that’s a good thing. These debates reflect a field deeply committed to preparing excellent teachers in diverse ways.

The summary that follows offers a concise look at the strengths, tradeoffs, and lessons emerging across these pathways. It is not an exhaustive analysis, but rather an effort to illuminate how sustaining multiple, high-quality routes—each responsive to context and community—can strengthen the profession as a whole.

*Traditional university-based programs* remain the most common pathway, providing aspiring teachers with a structured sequence of coursework, clinical experiences, and student teaching. While, as outlined above, variability in quality across programs is a challenge to address, traditional programs in many settings result in relatively strong preparation and support, [leading in some contexts to lower attrition in the early years of teaching](#). At the same time, due to the increasing cost of college, students in traditional university programs often require financial support or student loans, which can deter candidates, particularly those from historically underrepresented backgrounds. Forward-thinking university-based models such as [Arizona State University’s \(ASU’s\) Mary Lou Fulton College for Teaching and Learning Innovation](#) are responding to these challenges through integrating paid, scaffolded career and professional experiences throughout the learner journey, moving candidates from early-stage roles like tutoring to advanced placements in residency-style settings, culminating in job opportunities. Programs like these alleviate financial burdens while also ensuring that teachers are prepared to be both academically grounded and classroom-ready.



## ASU TEACHING FELLOWS

### Elevating Paraprofessional Pathways

The ASU Teaching Fellows program offers an accelerated pathway for Arizona paraprofessionals, instructional aides, and school support staff that is responsive and conducive to the lives of these professionals who dream to teach. Established by Arizona State University's The Mary Lou Fulton College for Teaching and Learning Innovation, the program is designed to seamlessly integrate academic learning with real-time classroom experience.

**THE ASU TEACHING FELLOWS IS BUILT FOR WORKING PARAPROFESSIONALS WHO WANT TO BECOME TEACHERS WHILE STILL EARNING AN INCOME**

Student teaching and classroom practice are embedded in the program, so participants don't need to leave their jobs or sacrifice income. Candidates can immediately apply pedagogical theory to their daily work with timely feedback, both from faculty and practicing educators. This program provides a pathway for school support staff currently holding an associate's degree to attain a bachelor's degree and become licensed teachers while staying in their school communities.

**THIS APPROACH WORKS BECAUSE IT RECOGNIZES THE UNIQUE ASSETS AND LIVED EXPERIENCE OF PARAS WHILE ALSO RESPONDING TO THEIR FINANCIAL AND DAILY NEEDS**

The first ASU Teaching Fellows cohort launched in August 2023. While full long-term outcomes are not yet available, the Mary Lou Fulton Teachers College for Teaching and Learning Innovation is known for its strong partnerships with schools and districts, innovative approaches to teacher preparation, and creating accessible pathways for teacher candidates that remove barriers without compromising quality.

#### LESSONS FOR THE FIELD

**Leverage GYO (Grow Your Own) recruitment** from paraprofessionals and school staff.

**Build strong college-school partnerships** to create responsive, cohesive opportunities for school staff.

Ensure prep curriculum and courses **respond to candidate workplace realities**.

**Create seamless integration** of coursework and clinical placements.

*Alternative certification routes* have also grown rapidly, offering accelerated, more affordable options for candidates who already hold a bachelor's degree or are pursuing teaching as a career change. While, as outlined above, the [quality of these programs can vary](#), the most effective models combine intensive pre-service preparation with ongoing mentorship and induction supports once teachers enter the classroom. Alternative pathways have broadened access to the profession, helped diversify the teaching workforce, and addressed shortages in high-need communities and subjects, such as STEM.

[Teacher Residencies](#) represent another promising model, blending coursework with extensive, yearlong classroom practice under the guidance of accomplished mentor teachers. Residencies often include financial support to candidates, such as paid clinical experience, living stipends, or tuition remission, making them accessible to more diverse candidates and helping [improve retention rates, which can be significantly higher than in other pathways](#). Their close alignment with district workforce needs positions them as a powerful strategy for strengthening teacher pipelines, though challenges include their high upfront costs, complex governance, and sustainability beyond initial grant funding. In addition, the STEM field in particular is grappling with how to navigate the [unique challenges for secondary STEM candidates](#) to complete year-long residency requirements alongside required, intensive content-based coursework. The downside of [residencies is that they are one of the most expensive models to implement, often putting the cost of paid clinical experience on the preparation program, school district, state, or creating a reliance on philanthropic support](#). This can create questions and challenges for long-term sustainability.

[Registered Teacher Apprenticeship Programs \(RTAPs\)](#), [related and distinct from Residencies](#), are the newest pathway to emerge, combining paid on-the-job training, progressive wages, and linked coursework with mentorship from experienced teachers. [Tennessee's Teacher Apprenticeship Model](#) was the first program to be federally registered by the US Department of Labor as a teacher apprenticeship in 2022, and as of 2025, 48 states have [apprenticeship options](#). By treating teacher preparation as a form of compensated work, and formally recognizing teaching as an “apprentice-able field” through the US Department of Labor, RTAPs make the profession more financially accessible and appealing, especially for candidates from underserved backgrounds. They also tap into federal and state apprenticeship funding streams, creating a potentially durable source of support. However, RTAPs are still in their infancy, and questions remain about how best to integrate the education and workforce sectors and ensure long-term sustainability.

*Grow Your Own initiatives*, often incorporating either apprenticeship or residency models to support paid clinical practice, take a community-based approach, recruiting paraprofessionals, high school students, or local residents who are more likely to remain in and reflect the diversity of the communities they serve. [Grow Your Own programs are also growing rapidly](#); from 2020 to 2024, the number of states funding Grow Your Own initiatives increased from 18 to 35, plus the District of Columbia, and every state has at least one Grow Your Own program.

Together, these expanding pathways illustrate a field in transition — and a field that recognizes that no single pathway can meet the scale and diversity of the current teacher shortage, especially in STEM. Promising models seek to attract a wider and more diverse pool of candidates, lower financial barriers to entry, and better align preparation with the realities of classroom practice. While each model faces its own challenges of cost, coordination, and sustainability, the variety of approaches points toward a more flexible and responsive teacher preparation system than in the past.



### **Financial accessibility is a defining feature of emerging pathways.**

Field leaders, including our Brain Trust members, emphasize that making teacher preparation financially viable is mission-critical to realizing the dreams of those who aspire to teach. Residencies, apprenticeships, and many Grow Your Own models stand out for reducing the financial burden on candidates by offering paid, job-embedded training that allows them to “earn while they learn.” [These pathways are especially effective at recruiting nontraditional candidates, such as paraprofessionals, school-adjacent staff, and local community members, who often face financial barriers to traditional routes](#), thereby diversifying the talent pool.

Programs, pathways, and state governments are responding to the call for financially accessible options in myriad ways worth learning from. For instance, [New Mexico](#) has undertaken a significant statewide initiative to transform its teacher preparation system towards paid teacher residencies, establishing a \$35,000 per year stipend for all residents, with the goal of making paid residencies the norm. Additionally, Texas recently passed House Bill 2, which established the Preparing and Retaining Educators through Partnership (PREP) Program Allotment to strengthen teacher recruitment,

preparation, and mentorship through sustained, formula-based funding. [The allotment provides \\$8,000–\\$39,500 per teacher candidate in districts and charter schools in partnership with a preparation program](#), depending on the pathway, district need, and certification area, to support stipends for residents, mentors, and contributions to educator preparation programs.

Programs such as [Western Governors University \(WGU\) School of Education](#) provide relatively low tuition paired with an online competency-based model that allows students to accelerate as they demonstrate mastery, reducing the time and cost of a degree. WGU also offers several grants and scholarships, [some specifically targeted towards paraprofessionals](#), that offer small amounts of funding to cover financial burdens outside of tuition that can keep students from persisting and completing their programs.

WESTERN GOVERNORS  
UNIVERSITY (WGU)

Removing Barriers to Teacher  
Preparation

Western Governors University (WGU) offers a comprehensive suite of financial supports aimed at reducing the economic barriers that keep aspiring educators and other students from persisting and completing their degrees. WGU’s scholarships and grants focus not only on tuition but also address unpredictable financial burdens such as cost of living, emergencies, student teaching stipends, and technology needs for their national online student community.

WGU’S FINANCIAL SUPPORT MODEL PAIRS  
RELATIVELY LOW TUITION WITH OVER 80 TYPES  
OF SCHOLARSHIPS, INCLUDING SUPPORTS  
SPECIFICALLY FOR SCHOOL OF EDUCATION  
STUDENTS AND STUDENTS FACING FINANCIAL  
HARDSHIPS

WGU offers aspiring teachers a \$2,000 student teaching stipend for clinical experience. Other supports include emergency aid and scholarships for students re-entering education, in rural areas, or currently working in K-12 settings, plus specialized scholarships in partnership with states, districts, and industry partners.

THIS APPROACH WORKS BECAUSE THIS  
EXTENSIVE ACCESS TO A BREADTH OF FINANCIAL  
SUPPORTS ADDRESSES FINANCIAL BARRIERS  
THAT COMMONLY DERAIL COMPLETION FOR  
FUTURE TEACHERS

In 2025, WGU awarded over \$65 million in scholarships to more than 23,000 students, with 75% of funding going to historically underserved groups. Nearly \$2.5 million was distributed as emergency aid, and recipients reported greater academic continuity, reduced stress, and higher completion rates.

LESSONS FOR THE FIELD

**Scholarships do not need to be limited to tuition.**  
Targeted stipends, smaller awards, and emergency grants can significantly affect retention and completion.

Programs can maximize equity of impact by **designing aid for nontraditional teacher candidates**, such as paraprofessionals or those balancing school with work or caregiving.

**Partnerships with districts, states, or industry** expand scholarship options and help align preparation pathways with workforce needs.

In another example, [UTeach](#) allows STEM majors to earn a teaching certification alongside their STEM degrees through early, intensive classroom experience and strong partnerships between colleges of education, colleges of science, and local school districts. UTeach provides candidates a financial benefit by embedding teacher preparation into students’ existing degree pathways, thus reducing the need for additional years of study to become a STEM teacher, as well as by offering tuition-free introductory courses to inspire STEM majors to consider teaching. Dr. Kim Hughes, Director of the UTeach Institute at the University of Texas at Austin, summarizes these benefits:

“When you talk about trying to attract a STEM teacher workforce, you cannot do that if the teachers that you want to attract encounter increased time, increased cost, or other barriers to pursuing teacher credentialing ... UTeach recruits from the largest available pool to become future teachers, which is undergraduate STEM disciplinary majors in higher ed, and we have figured out how to do it in a way that does not add time or cost to students.”

— Dr. Kim Hughes, Director of the UTeach Institute, University of Texas at Austin

”

[Alabama A and M University](#) is an HBCU leading the way at recruiting and retaining diverse STEM teacher candidates through the UTeach Model.

## ALABAMA A&M UNIVERSITY UTEACH (AAMUTEACH)

### Diversifying Alabama's STEM Teacher Pipeline

Alabama A&M University's UTeach program (AAMUTeach) offers a four-year pathway for STEM majors to earn both a full STEM bachelor's degree and secondary teaching certification, equipping graduates to teach math and science in Alabama's middle and high schools. As one of only four HBCUs implementing UTeach, AAMUTeach is at the forefront of a statewide vision to triple Alabama's annual production of new STEM teachers and address both shortages and diversity challenges.

#### AAMUTEACH REIMAGINES WHO BECOMES A TEACHER BY PROVIDING ACCESS AND FOR DIVERSE STEM MAJORS

The program provides scholarships and targeted stipends for travel, books, background checks, and the extra costs associated with certification without adding additional credits or time to graduation. Through early, sustained classroom experiences, coursework aligned with real teaching practice, and robust academic mentorship, AAMUTeach allows STEM students to explore teaching and develop both industry and education career options.

#### THIS APPROACH WORKS BECAUSE IT EXPOSES STEM MAJORS TO LOW-STAKES, LOW-COST OPPORTUNITIES TO PURSUE TEACHING

Launched in fall 2023, AAMUTeach had the largest first-semester enrollment among Alabama's UTeach universities, with 39 students, 84% identifying as Black. The initiative's goal is to graduate 200 new STEM teachers by 2027. Nationally, UTeach programs are found at 53 universities in 22 states, graduating 522 STEM teachers in SY24-25, with 86% of graduates entering teaching.

### LESSONS FOR THE FIELD

**Provide early practical teaching experiences** in STEM majors' introductory courses.

**Foster university collaborations** across STEM and Education departments.

**Align coursework** with extensive classroom exposure and clinical mentorship.

**Make teaching financially accessible** by offering scholarships, stipends, and no-cost/low-cost paths to certification for STEM majors.



**Building expertise within communities has potential to improve effectiveness, diversity, and retention.**

Community-rooted pathways, including [Grow Your Own programs](#) that leverage Registered Teacher Apprenticeships (RTAPs) and teacher residencies to develop clinical expertise, are increasingly



prioritized as essential strategies to address persistent teacher shortages and diversify the educator workforce. Grow Your Own approaches, often seen as [“more of a conceptual framework than a specific model of teacher preparation,”](#) are designed to recruit aspiring educators directly from local communities, often targeting paraprofessionals and high school students who already possess valuable community knowledge. Even as [program design features vary widely, supports for paraeducator candidates are variable, and funding is not yet sustainable](#), there is a consistent recognition of the inherent value and potential of supporting those from within communities to thrive as teachers.

Grow Your Own programs that support high school students in learning about and working towards careers in teaching are the [most common](#). One notable model is the [Center for Black Educator Development \(CBED\)](#). CBED cultivates future Black educators through its [nationally recognized Teaching Academy](#), a year-round high school CTE program that introduces students to teaching as a form of activism through a curriculum grounded in Black pedagogy. Participants are also eligible for CBED’s [Future Teacher of Excellence Fellowship](#), which offers scholarships, coaching, and ongoing support into college and the classroom.

CENTER FOR BLACK EDUCATOR  
DEVELOPMENT (CBED) TEACHING  
ACADEMY

Cultivating Culturally Responsive  
Educators

The Center for Black Educator Development’s (CBED) Teaching Academy is a nationally recognized high school “Grow Your Own” program dedicated to building the national Black teacher pipeline. The Teaching Academy provides culturally responsive Career & Technical (CTE) education pathways rooted in Black teaching traditions, service, and social justice.

CBED’S TEACHING ACADEMY STANDS OUT FOR  
ITS DEEP CULTURAL AFFIRMATION AND HOLISTIC  
SUPPORT STARTING IN HIGH SCHOOL

Students experience the LeCount–Catto curriculum centered on Black pedagogy, mentorship, dual enrollment opportunities, and targeted professional coaching, preparing them to serve as teaching assistants in mentor classrooms. The Teaching Academy partners with higher education institutions to offer dual enrollment, so students graduate high school with college credit, providing both academic and financial support structures to ease transitions for underrepresented students. Additionally, Teaching Academy students are also eligible for CBED’s [Future Teachers of Excellence Fellowship](#), where they receive additional academic, financial, and social support throughout college and beyond.

THIS APPROACH WORKS BECAUSE IT EMBEDS  
CULTURALLY AFFIRMING PEDAGOGY WITH  
MENTORS WHO FOSTER BELONGING

As of 2024, 444 students have participated in the Teaching Academy. The majority of students who participated report a deep understanding of the impact of having access to a Black educator, experience an increase in sense of belonging, and report pride in identifying as Black or Brown.

LESSONS FOR THE FIELD

**Embed culturally affirming pedagogy** that affirms identities and connects teaching with social justice.

**Recruit and prepare high school students** to expose them to high-quality pathways early.

**Robust partnerships between high schools and colleges** create opportunities for dual enrollment and certification, helping students graduate with college credit.

Programs that support paraprofessionals, teachers’ aides, after-school staff, and tutors are also growing and gaining recognition as a critical strategy for supporting aspiring educators from within local communities. While many promising programs are emerging to provide targeted opportunities for this population, emerging research demonstrates that in some contexts, paraeducators of color transition into

teaching at a lower frequency than White paraeducators. This highlights the need for intentional strategies to recruit and effectively support diverse paraprofessionals in these Grow Your Own programs.



**Emerging pathways show promise but require investment, research, and quality assurance.**

Residencies, apprenticeships, and Grow Your Own models show early promise in diversifying the pipeline, improving retention, and expanding access through paid clinical experiences. Enthusiasm in the field for emerging models is high. For instance, our Brain Trust described a “staggering” level of energy around apprenticeships, [which have spread rapidly in just a few years](#). Yet these models remain nascent, with uneven quality, limited outcome data, and complex funding and policy challenges. To ensure their long-term efficacy and scalability, stakeholders stressed the need for robust research, clearer quality standards, and continued collective learning. As Brain Trust member Nathan Kriha, Policy Analyst with The Education Trust, articulates:

“

**There's a lot of optimism, and I think this optimism is warranted, to believe that registered teacher apprenticeship programs will produce teachers who stay in classrooms for longer. But it's too early to say for sure. What is needed most in the field right now, of Registered Teacher Apprenticeships, is just outcome data to examine the efficacy of these programs and identifying high-quality models.**

— Nathan Kriha, Policy Analyst, The Education Trust

”

Coalitions and collaboratives such as the [Pathways Alliance](#) are helping to bring greater coherence and shared learning to a rapidly expanding ecosystem of teacher preparation models. For example, the Pathways Alliance developed the [National Guidelines for Apprenticeship Standards](#) to strengthen consistency and quality as programs multiply. Beyond100K and other network-based initiatives contribute by connecting partners across sectors to accelerate learning, surface promising practices, and drive collaborative innovation around equity-centered pathways into teaching. At the same time, membership-based professional associations such as AERA, ACTE, and NARST continue to anchor the field's research and professional infrastructure. Their convenings, peer-reviewed scholarship, and policy engagement play a complementary and vital role, advancing rigorous research and field-building upon which collaborative networks can build and iterate. Together, these efforts—spanning networks, associations, and collaboratives like the 14 rural-serving universities exploring rural STEM teacher preparation—reflect the field's collective capacity to balance innovation with evidence, and local context with shared standards.

Other groups are activating shared learning to study the needs and effectiveness of models in critical high-needs populations and geographies, such as a [collaborative group of 14 rural-serving universities](#) working together to improve understanding of the needs of this unique context and thus improve STEM teacher recruitment and retention outcomes in rural schools.

## TEACHER PREPARATION FOR RURAL STEM TEACHER PERSISTENCE AND RETENTION (TPR<sup>2</sup>)

### Uniting Institutions to Collaboratively Support Rural STEM Teacher Candidates

The Teacher Preparation for Rural STEM Teacher Persistence and Retention (TPR<sup>2</sup>) project is a research initiative uniting 14 colleges and universities across the nation, including Brain Trust member Fort Hays State University, to address the persistent challenge of recruiting, preparing, and retaining STEM teachers in rural schools. Members of the research team come from both Colleges of Education and STEM departments, intentionally bringing together complementary strengths in research, STEM, and pedagogy to serve geographically dispersed rural communities.

#### WHAT MAKES TPR<sup>2</sup> A BRIGHT SPOT IS ITS MODEL OF MULTI-INSTITUTIONAL COLLABORATION.

By creating a robust network, collaborators are able to pool resources and enrollment data, share research and administrative capabilities, and collectively generate new knowledge on rural STEM teacher workforce needs. This project pairs common survey instruments across institutions to track shared outcomes with a framework and distributed leadership, fostering co-development and mutual learning across disciplines and institution types.

#### THIS APPROACH WORKS BECAUSE IT COLLECTIVELY POOLS MORE KNOWLEDGE, RESOURCES, AND LEARNING THAN ONE RURAL-SERVING INSTITUTION ALONE COULD PROVIDE

TPR<sup>2</sup> is a longitudinal research and improvement project, still underway, but it has already shared early findings about educator preparation program features associated with increased rural STEM teacher persistence and retention, including specialized rural-focused curricula, intentional field placements, and tailored recruitment strategies.

#### LESSONS FOR THE FIELD

**Form alliances** across institutions and organizations to support context-specific or place-based research and share best practices.

**Bridge silos** between educator preparation and STEM content areas using transdisciplinary teams and joint project management.

**Leverage pooled data, shared metrics, and resources** to enable meaningful, generalizable research.

As noted above, the field is also problem-solving around how to ensure sustainable funding for critical but costly “earn while you learn” programs that require a significant investment to pay candidates for clinical experience. Capitalizing on new sources opened up through apprenticeship models, while strategizing on [how to braid funding](#) from different sources, is top of mind.

## Supports are needed for teacher candidates to persist and thrive

Once candidates enroll in preparation programs, persistence and success hinge on the social, emotional, financial, and academic supports they receive. High-quality, culturally responsive mentorship is essential, helping candidates both master their practice and feel a sense of belonging. Targeted assistance with licensure requirements has also proven critical, reducing attrition and advancing equity by ensuring that candidates from all backgrounds can clear a major hurdle to entering the classroom. Just as importantly, wraparound scaffolds such as childcare or transportation stipends, emergency aid, and access to counseling can make the difference between dropping out and completing the pathway.

Taken together, these supports boost persistence and ensure that new teachers enter classrooms ready to thrive, yet they remain unevenly available and too often treated as optional rather than fundamental.



**High-quality, culturally responsive mentorship is a cornerstone of effective preparation.**

Strong clinical mentorship towers above most other interventions in its impact on candidate effectiveness and long-term retention, [especially for aspiring teachers of color](#). Pre-service mentorship is recognized as highly valuable to the [success of new teachers](#). The [research is clear](#) that candidates placed with instructionally effective mentor teachers are more instructionally effective themselves and [more likely to stay in the profession longer](#).

But not all mentorship is equal, and quality varies. For mentorship to be most effective in supporting teacher candidates, several key conditions must be met. These include thoughtful selection and matching by preparation programs and school partners, well-trained mentors, clear guidance on strong mentorship practices, and financial support for mentors to offset the time and cost commitments required. The Pathways Alliance's [National Definition of Teacher Residencies](#) envisions a framework for the mentor teacher role, where mentor teachers provide coaching, feedback, and modeling for aspiring teachers, while themselves receiving compensation, professional learning, and recognition for their leadership. [Encorps, in partnership with LAUSD](#), provides a set of guidelines, resources, and supports for mentors that are valuable resources and exemplars towards building common standards for mentorship across the field.



## ENCORPS & LOS ANGELES UNIFIED SCHOOL DISTRICT (LAUSD)

### Structuring Effective Mentorship for STEM and CTE Pathways

EnCorps, in partnership with the Los Angeles Unified School District (LAUSD), offers a strategic, mentorship-driven program to recruit, prepare, and retain STEM and CTE educators, specifically mid-career professionals moving from industry into classrooms. The program centers mentorship not as an add-on, but as an essential, well-structured pillar that differentiates its model and improves retention, confidence, and effectiveness for new teachers.

#### THE ENCORPS-LAUSD PARTNERSHIP IS DESIGNED WITH EXTENSIVE MENTOR SELECTION, TRAINING, AND SUPPORT PROCESSES

Mentors provide consistent support through ongoing check-ins, classroom observations, and structured feedback cycles that help new teachers grow their practice. LAUSD reinforces the system by recognizing mentors with incentives and leadership pathways that validate their contributions. Angel Beamer, EnCorps Program Director, shared, ***“Mentorship is most effective when it’s clearly defined and fully supported. We set expectations up front, provide the tools to follow through, and ensure mentors are recognized and compensated for the critical role they play in teacher success.”***

#### THIS APPROACH WORKS BECAUSE THE PARTNERSHIP INTENTIONALLY SUPPORTS BOTH NEW TEACHERS AND THE MENTORS

After its first full year, the program supported the onboarding and growth of 25 new CTE teachers. With only a few exceptions due to factors beyond their control, the vast majority of the cohort retained their positions, highlighting the critical role mentorship plays in retention.

### LESSONS FOR THE FIELD

**Make mentorship central** to teacher preparation, with clear protocols, expectations, and resources.

**Select mentors who bring deep pedagogical expertise and school-site knowledge**, and who receive intentional training and ongoing development.

**Compensate mentors fairly** and recognize their leadership role.

Field leaders, including those in our Brain Trust, also spotlight the need to be explicit about [effective mentoring practices for teachers of color and indigenous teachers](#), prioritizing culturally responsive approaches that build on teachers’ racial, cultural, and social identities, treat mentors as co-learners, and provide emotional as well as pedagogical support. This type of mentorship tends to be relational rather than transactional, creating safe, trusting spaces for dialogue about racial identity, power dynamics, and social justice.

[Edifying Teachers](#) is a national mentorship network that pairs new and aspiring teachers with skilled veterans who provide personalized, relationship-grounded coaching aimed at helping educators grow, thrive, and stay in the profession, with a particular focus on [teachers of color](#) and on developing a diverse pool of mentors. Dr. Rudy Ruiz, Founder and CEO, describes his model of mentorship as “mentorship 3.0” – where mentorship goes beyond instructional practices and pairing based on proximity. Rather, Edifying Teachers’ mentorship platform allows mentees to select their own mentor based on shared identities and areas of expertise and intentionally acknowledges both mentor and mentee as whole people. As [Dr. Ruiz shared in an interview with Citizen Schools](#),

“

“Often in the field of education, people hear mentorship, and they get nervous or uncomfortable because there's been negative connotations largely put around mentorship. The connotation has been that these students or educators have a deficit or are not succeeding, therefore they must have a mentor. Our core work when it comes to the education workforce has been introducing new ways of thinking, talking about and doing the work in terms of language. We know that throughout human history, for folks to grow into any space, they need high-quality mentorship, and that's what we're providing.”

— Dr. Rudy Ruiz, CEO, Edifying Teachers

”



### **Licensure support reduces attrition and promotes equity.**

Licensure supports can significantly reduce the financial and mental costs associated with certification, reducing attrition and making teacher preparation more accessible to diverse candidates. The cost of licensure exams (such as Praxis and edTPA) ranges from [\\$50 to \\$300 per test](#), and candidates who fail must repeatedly pay to retake them, causing financial strain and delays in certification. In fact, many students do not pass on their first attempt, and considerable [disparities in passing rates](#) exist by race. Data suggest that more authentic [performance-based and competency-based exams reduce these disparities](#), making them a potential alternative to standardized assessments.

States like [Tennessee](#) and [Colorado](#) have begun reducing or subsidizing the costs of licensure exams and providing free access to test preparation tools, demonstrating the value of systemic investment in preparing a high-quality, representative teaching force. Specifically, Tennessee partnered with [Study.com](#), whose [Keys to the Classroom](#) initiative allowed candidates to take advantage of high-quality preparation resources and practice exams at no cost, which candidates reported finding extremely valuable. As another example, Minneapolis Public Schools surveyed paraprofessionals to understand impediments to enrollment; after unearthing that fear of failing licensure exams was a key barrier, they began to offer [math, reading, and writing courses as well as one-on-one tutoring](#) for certification exams. These supports, combined with other proactive outreach efforts tailored to the needs of diverse candidates, led to a notable increase in the diversity of their residency program. [Even as the field grapples with the extent to which licensure exams are predictive of future teaching success and aligned to evidence-based instructional practices](#), these financial supports are needed and notable within the current landscape.



### **Social-emotional, academic, and financial supports that foster well-being and belonging are critical for candidate success.**

Just as teachers require [affirming environments that nourish and celebrate their humanity](#) to stay once they enter the profession, building a sense of capability, belonging, and community is critical to supporting and retaining teacher candidates. As [Beyond100K's research](#) shows, teachers who experience belonging themselves are better equipped to create classrooms where their students feel they belong – and it stands to reason that this holds for teacher candidates as well. Academic assistance, inclusive learning environments, and access to faculty who reflect the diversity of the student population are a piece of this puzzle and are essential for supporting candidates, especially those from underrepresented backgrounds, through rigorous programs and licensure processes.

Minority-Serving Institutions (or MSIs), including Historically Black Colleges and Universities, exemplify what this looks like in practice. These institutions have long served as national leaders in preparing and supporting educators of color through programs that integrate academic rigor with deep cultural and community connection. As such, Minority-Serving Institutions play an outsized role in the preparation of teachers of color. Across the United States, Minority-Serving Institutions [issued 20% and 36% of all education degrees earned by candidates of color in school year 2019-2020](#).

Insights from our Brain Trust and the research community underscore the importance of creating strong connections among teacher candidates through affinity groups and cohort models. [Field guidance on the components of effective residency models](#) emphasizes the importance of cohorts that foster collaboration and relationship-building among residents through shared coursework and field sites. Brain Trust member Dr. John Somers, Director of Graduate Studies and Associate Professor in the School of Education at the University of Indianapolis, shared myriad ways to foster social connection that create communities of caring and support, from game nights and makerspace projects to virtual communities of practice. As Matt Cheek, Executive Director of the [Nashville Teacher Residency](#), aptly summarizes:

“You know, teaching is hard enough, but teaching alone is impossible, and so you have to have that sense of belonging and connectedness with your colleagues and peers.”

— Matt Cheek, Executive Director, Nashville Teacher Residency

And, while an intentionally connected community is indispensable, aspiring teachers' success often hinges on concrete external supports and resources to bolster their well-being, both emotionally and financially. Nashville Teacher Residency's holistic approach is a model for teacher preparation that is both academically rigorous and deeply supportive of candidate well-being; the childcare and transportation stipends, emergency funds, and access to counseling it offers are among the supports that can make or break a candidate's ability to stay on the path to teaching. In a related vein, organizations such as the [Last Mile Education Fund](#) provide emergency or supplemental financial support to students near graduation in high-needs STEM fields in need of assistance with living expenses or emergency needs that can prevent them from completing their degrees.

## NASHVILLE TACHER RESIDENCY

### Prioritizing the Candidate Experience

Nashville Teacher Residency (NTR) is a community-rooted preparation program that has reimagined how new teachers enter the classroom. Founded in 2016, NTR not only offers rigorous, practice-based training but also extensive wraparound supports that make teaching a sustainable career path, especially for candidates of color.

#### NTR IS UNIQUE IN THE DEPTH OF ITS COMMITMENT TO CANDIDATE SUCCESS AND BELONGING

By eliminating tuition, providing childcare and transportation stipends, offering emergency funds, and guaranteeing access to counseling and other well-being services, NTR removes systemic barriers that too often push aspiring teachers out before they begin. As Executive Director Matt Cheek explains, **“I think what makes NTR different from a lot of other programs is that we are prioritizing the candidate experience. We’ve strived to create a culture of care for our candidates where they don’t just ‘get through’ our program, but they thrive and build the foundation to sustain in the long run!”**

#### THIS APPROACH WORKS BECAUSE IT ACKNOWLEDGES THE REALITY OF ASPIRING TEACHERS’ LIVES...

making belonging and well-being just as central as classroom management and pedagogy. NTR has graduated over 200 teachers in Nashville, with about 65% identifying as people of color. And the cohorts are growing each year, with the most recent class more than doubling in size from 16 to 40 candidates.

### LESSONS FOR THE FIELD

**Make preparation free or low-cost** to remove financial barriers.

**Provide wraparound supports** (childcare, transportation, counseling, emergency funds) so candidates can focus on learning.

**Center mentorship** as a core component of programming.

**Create cohort and alumni networks** to build a sense of community and belonging during preparation and beyond.





## **RECOMMENDATIONS AND A CALL TO ACTION**

As the above sections bring to light, the story of teacher preparation today is one of both challenge and possibility, and realizing its promise will require us to act together with urgency and vision. Actualizing the dream to teach requires more than isolated actions or innovations; it calls for a field-wide commitment to building pathways that are sustainable, accessible, inclusive, and of consistently excellent quality. The recommendations that follow are co-created with our Brain Trust and highlight the levers most critical to expanding and strengthening the teacher pipeline: ensuring long-term financial viability, surrounding all candidates with holistic supports, embedding culturally responsive mentorship, and spreading models that demonstrate quality. They also underscore the importance of research, alignment with future STEM workforce needs in an age of innovation, and recruitment strategies that spark new aspirations to enter the profession. These recommendations, coupled with concrete actions, offer a framework for strengthening teacher preparation so that aspiring educators are both inspired to enter the profession and positioned to succeed.

# Overview of Recommendations

**1**

Invest boldly in high-impact teacher preparation pathways to ensure long-term sustainability and affordability.

**2**

Ensure every candidate experiences supports that foster belonging and success.

**3**

Make culturally responsive mentorship a pillar of every program.

**4**

Band together to spread effective teacher preparation models.

**5**

Prioritize research on pathway effectiveness and candidate retention.

**6**

Prepare teachers to use emerging technology and partner with the STEM industry to inspire and develop the next generation of future-ready STEM leaders.

**7**

Create the conditions that allow more people to dream to teach.

# 1. Invest boldly in high-impact teacher preparation pathways to ensure long-term sustainability and affordability.

The financial burden of becoming a teacher remains one of the greatest barriers to building a strong and representative pipeline. “Earn while you learn” pathways, such as residencies and apprenticeships, which compensate candidates during clinical practice, show great promise in reducing this burden, but they are costly and too often dependent on short-term or patchwork funding and lack consistent data systems to meaningfully understand impact. To ensure lasting impact, the field must normalize paid clinical practice in both alternative and traditional pathways, as professions like medicine have done. Beyond100K partner and Executive Director of [City Teaching Alliance](#), Dr. Rahesha Amon, is an example of how field leaders can advocate for sustainable funding for their programs to policymakers by putting a monetary value on the cost of non-completers. She shares with policymakers:

“ we’re spending a lot of money on non-completers. Across the board, it’s millions of dollars...It’s not a little thousand here; it’s millions of dollars on non-completers. City Teaching Alliance is \$7,500 a year, which is drastically less than [professional development] and in-service, which schools are spending considerably more on. When teachers leave after 3 years, that’s a huge cost again.”

— Dr. Rahesha Amon, Executive Director, City Teaching Alliance

”

Additionally, sustainable funding strategies are crucial to the creation, implementation, and longevity of pathways that offer paid clinical experience. At the same time, investing in STEM-focused pathways is critical for preparing teachers in shortage areas and equipping students for the workforce of the future. One strong example of where public funds are being used to drive and support STEM educator preparation is through the [National Science Foundation's Robert Noyce Scholarship Program](#). This program funds scholarships, stipends, and professional development for STEM majors and professionals to become highly effective K-12 math and science teachers in high-need school districts. Noyce is a valuable public funder because it helps build a robust, diverse pipeline of qualified STEM educators committed to serving underserved communities, directly addressing national shortages and equity gaps in STEM teaching. Meeting the challenge of creating similar large public investments in preparation requires bold, field-wide action and the collective power of networks to advocate, educate, collaborate, and innovate toward long-term, systemic solutions.

## Taking action looks like:

*Advocate* at the federal and state levels for increased funding for programs such as apprenticeships and policy changes that expand and sustain funding streams.

---

*Orchestrate a bold, evidence-driven narrative campaign* that informs the public, builds consensus, and encourages action around the importance of financial security for teaching candidates, and how quality and affordability must go hand-in-hand if we are to equip classrooms with the well-prepared, diverse teachers our students need and deserve.

---

*Identify and scale creative solutions and bright spots*, working across programs and institutions to understand the nuances behind funding strategies that move towards sustainability and that can withstand political and economic turbulence, such as braided funding models that maximize available dollars, public-private partnerships that align to STEM workforce needs, or more localized funding sources.

---

## 2. Ensure every candidate experiences supports that foster belonging and success.

For teacher candidates to thrive and persist, they need holistic supports that span emotional, academic, and financial needs. Research and field leaders alike emphasize that inclusive and supportive academic environments, peer cohorts, and affinity groups are critical for building belonging and persistence. At the same time, practical supports such as childcare stipends, transportation assistance, or emergency micro-grants can determine whether a candidate completes a program. Equally important are well-being supports like counseling services. Together, these supports address distinct but interconnected needs, spanning academics, mental health, financial viability, and community. We advocate for the field to treat such supports as standard practice, provided to every candidate, and to learn from models within teacher education, such as the Nashville Teacher Residency, as well as in other fields that prioritize candidate support, such as medicine and STEM fields. For instance, UMBC's nationally recognized [Meyerhoff Scholars Program](#) provides a comprehensive support system whose [key components](#) have been successfully replicated by other programs to expand diversity in STEM. Teacher preparation can learn from and adapt these proven strategies to ensure that every candidate experiences the conditions needed to successfully complete programs with a sense of competence and belonging.



## Taking action looks like:

*Infuse [belonging](#) into* preparation program syllabi, courses, and activities, spotlighting concrete ways to infuse this concept into syllabi, courses, faculty conversations, and community events.

---

*Expand [wraparound supports for well-being and living needs](#),* taking advantage of small yet powerful supports that have an outsized effect on candidate persistence, such as by partnering with organizations that provide micro-grants to support living expenses or [last-mile awards](#).

---

*Replicate and learn from [effective models](#)* within and beyond the field of teacher preparation that prioritize taking care of candidates in diverse ways, like the Nashville Teacher Residency, wraparound supports, and Western Governors' University's breadth and variety of financial aids.

---

## 3. Make culturally responsive mentorship a pillar of every program.

Mentorship is one of the most powerful supports for fostering candidate success and belonging, and its importance is undisputed across the field. Strong mentorship is consistently linked to teacher effectiveness and retention, yet not all candidates experience the same level of support, particularly those from underrepresented backgrounds. Our Brain Trust underscored the importance of mentoring relationships that are intentionally designed to foster belonging, cultural responsiveness, and identity-affirming support, including pairing candidates with mentors who reflect their identities and experiences. As shared by EnCorps and LAUSD's story, this charge is especially important in STEM fields, where a shortage of teachers, and mentors of color in particular, makes access to strong, identity-affirming mentorship harder to achieve. At its best, mentorship strengthens preparation and persistence while modeling belonging. Making culturally responsive mentorship a universal feature of teacher preparation is thus essential to building a competent, diverse workforce that can create the inclusive classrooms our students need.

## Taking action looks like:

*Establish [a set of principles or guidelines](#)* to optimize mentorship programs through the lens of belonging and culturally responsive practice, building consensus and awareness, and promoting quality across the field.

---

*Advocate for and invest in* policies and programs that prioritize the compensation, professional development, and support of mentors across diverse fields and backgrounds.

---

*Analyze and expand frameworks* for state and program-level evaluation systems or standards that articulate and assess the components of high-quality, culturally responsive mentorship.

---

## 4. Band together to spread effective teacher preparation models.

Findings from our research and discussions with the Brain Trust highlight two essential insights: pathways into teaching must continue to expand without compromising quality, and there are already strong models that demonstrate how this balance can be achieved. The challenge lies in the wide variation across programs, which makes it difficult to achieve consistent quality at scale. To address this, networks, coalitions, research institutions, and learning communities are essential for identifying what works, for whom, and in what contexts, and for adapting effective practices across diverse settings. Beyond100K was founded on the belief that we solve our greatest challenges together, and our network is poised to lead this work in partnership with initiatives across the field, such as the [Pathways Alliance](#) and Brain Trust member Deans For Impact. DFI recently published their report [Pathways that Deliver](#), informed by their Leadership Collaborative. Meeting this challenge requires collective commitment to shared learning and coordinated action to reliably spread models that work.

### Taking action looks like:

*Launch a community of practice* or learning series where programs showcase their models and educators co-create tools to adapt them across diverse contexts.

---

*Investigate and learn from the data* behind different programs and models, identifying outliers to learn from that are achieving outsized results in relation to retention and effectiveness, particularly for diverse and nontraditional students.

---

*Analyze disaggregated data (qualitative and quantitative)* on candidate attrition across traditional, alternative, residency, and apprenticeship models in different local contexts to understand the root causes and nuances that explain why candidates in different contexts leave – or what makes them more likely to stay.

---

*Elevate and amplify successful programs and practices* and tailor the message and method of communication for different audiences with influence, such as legislatures, regulators, and funders.

---

## 5. Prioritize research on pathway effectiveness and candidate retention.

The field is energized by the promise of new pathways such as apprenticeships that enable teacher candidates to “earn while they learn,” graduate free of debt, and benefit from robust clinical experiences. Grow Your Own models, which are rooted in the wisdom and commitment of local communities, are gaining traction alongside other clinically intensive approaches that offer financial viability and meaningful training. There is broad optimism that these pathways could strengthen teacher quality and diversity, address shortages, and relieve financial burdens. Yet to realize their full potential, further research is needed. [New America created a research agenda to investigate the impact of Grow Your Own models](#) that serves as guidance and inspiration for further pathway and retention learning. At this early stage, research must document program effectiveness and identify the gaps and challenges to address as models scale.

### Taking action looks like:

*Develop and implement a collaborative research agenda* identifying the most critical unanswered questions in relation to all pathways, especially emerging pathways like apprenticeships and understudied candidate populations like paraprofessionals.

---

*Conduct qualitative and quantitative studies* that examine the impact of programs both during and following program participation, including a longitudinal assessment that follows graduates as they begin teaching roles.

---

## 6. Prepare teachers to use emerging technology and partner with the STEM industry to inspire and develop the next generation of future-ready STEM leaders.

By 2030, the [number of estimated STEM jobs is projected to reach 11.3 million](#), with growth occurring about twice as fast as in non-STEM fields, led by areas such as statistics, energy innovation, information security, epidemiology, and computer science. STEM educators are critical contributors to influencing the future workforce's national competitiveness, civic engagement, and ethical leadership in emerging fields. As the STEM workforce rapidly evolves, expanding and emerging teacher preparation models must be intentional about equipping candidates not only with strong pedagogy but also with the vision and skills to guide students into a future shaped by emerging technologies like AI. This requires preparing teachers to use AI responsibly in their own practice and to model its ethical and effective use for students. At the same time, preparation programs must equip teachers to help students thrive in an ever-evolving STEM workforce, fostering critical thinking, collaboration, and a sense of belonging alongside technical skills. Beyond100K partner the Colorado Department of Labor is leading the field in teacher externships and partnerships with STEM industry through their [Colorado State-Level Teacher Externship Program](#). By providing teachers with hands-on learning experiences with industry partners, the Department of Labor supports teachers to integrate connections and build awareness and context for students to STEM career pathways in their state. This illustrates how, by aligning preparation to both current classroom needs and future workforce demands, the field can ensure teachers are positioned to develop the next generation of STEM leaders.

### Taking action looks like:

*Engage in a learning community* to explore and grapple with emerging ways in which the use of AI and other emerging technologies in teacher preparation programs can support the reimagining of the role of the educator to support creativity, critical thinking, personalized learning, and STEM inquiry.

---

*Explore the possibilities, limitations, and challenges of tapping AI* to support teacher observations, coaching, and feedback in order to increase capacity and drive down costs.

---



*Mobilize partnerships with STEM industry* to align pre-service teacher preparation with workforce innovation, creating reciprocal relationships that provide resources, expertise, and hands-on experiences for teacher candidates while cultivating educators who inspire and prepare the next generation of STEM leaders (or STEM workforce).

---

## 7. Create the conditions that allow more people to dream to teach.

While this report has focused on expanding pathways and supports for those who already dream to teach, the field must also broaden the pool of individuals aspiring to enter the profession. Effective models exist: programs like UTeach recruit STEM majors into teaching, while EnCorps brings STEM career professionals into classrooms. As apprenticeship models expand, school-adjacent staff such as paraprofessionals and tutors are becoming increasingly aware of their potential to enter the profession. Campaigns such as [UTeach Alabama's statewide recruitment effort](#) and NSF's [Get the Facts Out](#) initiative are shifting perceptions of teaching by highlighting the rewards, realities, and impact of the profession. Yet, if we hope to inspire and recruit the next generation of teachers, those efforts must be grounded in comprehensive workforce data that clarify where the greatest needs and opportunities lie. Disaggregated data systems are essential for understanding teacher supply and demand, closing equity gaps, and targeting recruitment where teachers are most needed. Beyond100K's [Solution Lab to Accelerate State Teacher Workforce Data](#), in partnership with [SETA-ED](#), provides a [10-step roadmap](#) to help states strengthen and integrate their data systems. By pairing smart and inspiring recruitment with strong data systems, the field can expand the dream to teach in ways that are both aspirational and strategic.

### Taking action looks like:

*Change the narrative around STEM teaching* by uplifting the role and benefits to becoming a STEM educator, and providing ample opportunities for early exploration of teaching as a career.

---

*Build partnerships* between academic departments and schools of education to expose students to the benefits of teaching in their content area as a career, providing low-stakes opportunities to try out teaching.

---

*Expand awareness of and access to pathways* that recruit school-adjacent staff who are well-positioned to move into a full-time teaching position in their school communities, with a spotlight on areas most affected by teacher shortages.

---



## CONCLUSION

We conclude as we began, propelled forward by the hope and possibility that underlies the dream to teach, but armed with specific research, bright-spot examples from around the country, and actionable recommendations for how we can all take a next step forward toward transforming more people's dreams to teach into their new realities. We re-ground in knowing that this work is ultimately about the students who will discover their voice, curiosity, confidence, and potential in classrooms led by well-prepared teachers equipped to create STEM classrooms of belonging. Aspiring teachers begin with this dream to impact the lives of our young people and thus our society's future, but they endure and realize that dream only when we build the conditions for their talent to flourish.

This report has surfaced both the urgency and the path: **strengthen program quality reliably; remove financial barriers; expand paid, practice-rich pathways sustainably; and surround candidates with culturally responsive mentorship and supports that foster belonging and well-being.** *Dream to Teach* now turns insight into collective action. Together with partners across states and institutions committed to ending the STEM teacher shortage with equity, representation, and belonging, we will learn, advocate, implement, and innovate. We invite you to join us, as our Beyond100K network mobilizes in service of our youth, our shared future, and the many talented individuals who are poised and ready to turn dreams into reality.

# CREDITS

## Report written by:

Jennie Brotman, PhD, at Jennie Brotman Consulting, and Meghan Grady Serrano, Manager, Strategic Initiatives at Beyond100K

## Project guided by:

Maya Morales Garcia, Chief Program Officer of Beyond100K, and Talia Milgrom-Elcott, Executive Director of Beyond100K

## A special thanks to the members of the Beyond100K Dream to Teach Brain Trust who stewarded the research, creation, and publication of this report, including:

- Dr. Melissa Braaten, Associate Dean of Undergraduate and Teacher Education, University of Colorado Boulder
- Corrie Canaday, Senior Director of Academic Operations, WGU School of Education
- Matt Cheek, Executive Director of the Nashville Teacher Residency
- Heather Davis, Membership Coordinator, Tennessee Educators of Color Alliance
- Melanie Hobbs, Professional Learning in Foundations of Teaching at the American Federation of Teachers
- Dr. Shereen Holmes, Director of Clinical Faculty at American University / City Teaching Alliance
- Dr. Amy Kim, former Executive Director of EnCorps
- Nathan Kriha, Policy Analyst at EdTrust
- Dr. Earl Legleiter, Noyce Teacher Mentor at Fort Hays State University
- Dr. Vanessa Lujan, Director of the Center for K-12 Science at the Lawrence Hall of Science, UC Berkeley
- Jarvis Lundy, Director of Educator Diversity at The Hunt Institute
- Gretchen Mills, Prepared to Teach
- James Orlick, Director of Grant Writing at the University of Louisville
- Dr. John Somers, School of Education Graduate Director at the University of Indianapolis
- Tracey Staley, Senior Program Manager of Techbridge Girls
- Patrick Steck, Vice President, External Affairs at Deans for Impact
- Dr. Fred Uy, Director at the California State University Office of the Chancellor
- Heather Villarruel, Clinical Professor and Associate Director at the Arizona State University Mary Lou Fulton College for Teaching and Learning Innovation
- Dr. Angela Webb, Associate Professor at James Madison University

## Contributing Beyond100K Staff

- Jason Dónes, Chief of People and Operations
- Dr. Nardos Ghebreab, Senior Program Manager
- Ana Luz Hernandez, Associate Director of Programs
- Dr. Ava Javid, Associate Director of Growth
- Ileana Lindsay, Partner Program Manager
- Gabbie Meis, Network Manager
- Toyin Ogunleye, Senior Manager of External Affairs

## An additional thanks to the following field leaders who participated in discovery calls and interviews, including:

- Dr. Rasheda Amon, Executive Director of City Teaching Alliance
- Sarah Greenup, Biology Teacher, West High School at Wichita, Kansas
- Candy McGuire, Instructor and Clinical Supervisor at University A&M UTeach
- Dr. Rudy Ruiz, Founder and CEO of Edifying Teachers
- Ryan Saunders, Director of State Policy at the Learning Policy Institute
- Alexis W., Computer Science and Technology Teacher in New York
- Mimi Woldeyohannes, Managing Director of External Affairs at the Center for Black Educator Development



# BIBLIOGRAPHY

---

- 100Kin10. *Belonging: What we know about belonging and how to cultivate STEM classrooms*. (May 2022).  
[https://docs.google.com/presentation/d/1GIVR\\_ELq8bQu8vLa7ACRUAXOqG0la2X39poMLs6SrS0/edit?slide=id.p3#slide=id.p3](https://docs.google.com/presentation/d/1GIVR_ELq8bQu8vLa7ACRUAXOqG0la2X39poMLs6SrS0/edit?slide=id.p3#slide=id.p3)
- Amaya Garcia, B., Carl, B., Gist, C. D., Sanderson Edwards, D., Greenberg Motamedi, J., Seelig, J., & Ahram, R. (2025, April 10). Research agenda: Grow your own teachers. New America. <https://www.newamerica.org/education-policy/briefs/research-agenda-grow-your-own-teachers/>
- AAAS ARISE. (2023, August 9). Positioning universities to recruit and train STEM teachers who stay in rural schools: A collaborative approach. <https://aaas-arise.org/2023/08/09/positioning-universities-to-recruit-and-train-stem-teachers-who-stay-in-rural-schools-a-collaborative-approach/>
- Allegretto, S. A. (2024, September 12). Teacher pay rises in 2023—but not enough to shrink pay gap with other college graduates. Economic Policy Institute. <https://www.epi.org/publication/teacher-pay-in-2023/>
- American Federation of Teachers. (2022, July). [\*Here today, gone tomorrow? What America must do to attract and retain the educators and school staff our students need\*](#). American Federation of Teachers.
- American Institutes for Research. (2023, October). [\*The rising cost of becoming an educator: Reimagining pathways to the profession\*](#). Center on Great Teachers and Leaders.
- Camp, A., Zamarro, G., & McGee, J. B. (2024). [\*Untapped potential? Understanding the paraeducator-to-teacher pipeline and its potential for diversifying the teacher workforce\*](#). Annenberg Institute at Brown University. <https://edworkingpapers.com/ai24-1034>
- Carver-Thomas, D. (2018). [\*Diversifying the teaching profession: How to recruit and retain teachers of color\*](#). Learning Policy Institute. <https://learningpolicyinstitute.org/product/diversifying-teaching-profession>
- Citizen Schools Learning Network. (2025, June 25). Dr. Rudy Ruiz expert spotlight. <https://cslearningnetwork.citizenschools.org/news/1260113>
- Deans for Impact. (2025, August 18). Pathways that deliver: A policy framework for building affordable, high-quality pathways into teaching. <https://www.deansforimpact.org/files/assets/dfipathwaysthatdelivervf.pdf>

The Economist. (2025, September 23). How to spot a genius. <https://www.economist.com/finance-and-economics/2025/09/23/how-to-spot-a-genius>

Education Trust. (2025, January 10). *Registered Teacher Apprenticeship Programs: A 50-State Scan*. The Education Trust. Retrieved from <https://edtrust.org/rti/registered-teacher-apprenticeship-programs/>

Ellis, C., Putman, H., Noble, R., & Peske, H. (2024). *Defining types of clinical practice*. National Council on Teacher Quality.

García, A. (2023, October 6). *How teacher apprenticeship is changing teacher preparation*. New America. <https://www.newamerica.org/education-policy/edcentral/how-teacher-apprenticeship-is-changing-teacher-preparation/>

Garcia, A. (2024). *Grow your own teachers: A 50-state scan of policies and programs* (Version 2, updated July 8, 2024). New America. <https://www.newamerica.org/education-policy/reports/grow-your-own-teachers/>

Garcia, A. (2024, February 6). *What's the difference between Grow Your Own, teacher residency, and teacher Registered Apprenticeship?* EdCentral, New America. <https://www.newamerica.org/education-policy/edcentral/whats-the-difference-between-gyo-teacher-residency-and-teacher-registered-apprenticeship/>

García, E., Wei, W., Patrick, S. K., Leung-Gagné, M., & DiNapoli, M. A., Jr. (2023). *In debt: Student loan burdens among teachers*. Learning Policy Institute. <https://doi.org/10.54300/497.986>

Geduld, A. (2025, August 11). A “Texas-sized solution” to a “Texas-sized problem”: Ed bill signed into law. The 74. <https://www.the74million.org/article/a-texas-sized-solution-to-a-texas-sized-problem-ed-bill-signed-into-law/>

Get the Facts Out. (n.d.). Facts and data [Fact sheet]. American Physical Society, American Chemical Society, American Association of Physics Teachers, & Colorado School of Mines. <https://getthefactsout.org/facts-and-data/>

Get the Facts Out. (2023, July 21). Teacher loan forgiveness, scholarships, and grants by state. <https://getthefactsout.org/teacher-state-loan-forgiveness/#1691602508153-cc61e47f-e364>

Gist, C. D., Bristol, T. J., Flores, B. B., Herrera, S., & Claeys, L. (2024, April 8). Effective mentoring practices for Teachers of Color and Indigenous Teachers. Kappan Online. <https://kappanonline.org/mentoring-bipoc-teachers-gist-bristol-flores-herrera-claeys/>

Hughes, K., Culpepper, C., & Moreland, A. (2024). [Optimizing teacher residencies in Texas: Considerations for secondary STEM candidates](https://institute.uteach.utexas.edu/residencyreport). Report from the Secondary STEM Teaching Residency Advisory Group. The UTeach Institute. <https://institute.uteach.utexas.edu/residencyreport>

Keese, J., Waxman, H., & Asadi, L. (2022). [Teacher retention intention: Relationships between preparation, support, and perceptions of teaching](https://doi.org/10.1016/j.tate.2021.103594). *Teaching and Teacher Education*, 110, 103594. <https://doi.org/10.1016/j.tate.2021.103594>

Learning Policy Institute. (2025, April). Student loan burdens among teachers [Fact sheet]. [https://learningpolicyinstitute.org/media/4692/download?inline&file=Student\\_Loan\\_Burdens\\_Among\\_Teachers\\_FACTSHEET.pdf](https://learningpolicyinstitute.org/media/4692/download?inline&file=Student_Loan_Burdens_Among_Teachers_FACTSHEET.pdf)

McDole, T., & Francies, C. (2022). State policy levers to address teacher shortages. Education Commission of the States. <https://www.ecs.org/wp-content/uploads/State-Policy-Levers-to-Address-Teacher-Shortages.pdf>

Najarro, I. (2023, December 13). The role mentors and school leaders play in retaining teachers of color. Education Week. <https://www.edweek.org/leadership/the-role-mentors-and-school-leaders-play-in-retaining-teachers-of-color/2023/12>

National Academy of Education. (2024). [Evaluating and improving teacher preparation programs](https://doi.org/10.31094/2024/2). K. M. Zeichner, L. Darling-Hammond, A. I. Berman, D. Dong, & G. Sykes (Eds.). National Academy of Education. <https://doi.org/10.31094/2024/2>

National Center for Science and Engineering Statistics. (2021, July 7). Teachers of mathematics and science (Table K12-4). In Science and Engineering Indicators 2022. National Science Foundation. <https://nces.nsf.gov/pubs/nsb20211/table/K12-4>

National Council on Teacher Quality. (2024, June). Data brief: How do trends in teacher preparation enrollment and completion vary by state? <https://www.nctq.org/research-insights/data-brief-how-do-trends-in-teacher-preparation-enrollment-and-completion-vary-by-state>

National Council on Teacher Quality. (2018, November). Facts to know about teacher shortages. [https://www.nctq.org/wp-content/uploads/2025/03/Teacher\\_Shortage\\_Fact\\_Sheet\\_2018.pdf](https://www.nctq.org/wp-content/uploads/2025/03/Teacher_Shortage_Fact_Sheet_2018.pdf)

National Science Board. (2021). Teachers of mathematics and science (In Elementary and secondary STEM education, NSB-2021-1). National Center for Science and Engineering Statistics, National Science Foundation. <https://nces.nsf.gov/pubs/nsb20211/table/K12-4>

Neally, Kate (2022). "Underrepresentation of Minoritized Groups in STEM Education: A Metasynthesis Review," *Journal of STEM Teacher Education*: Vol. 57: Iss. 1, Article 4. DOI:

<https://doi.org/10.30707/JSTE57.1.1664998343.885282> Available at:  
<https://ir.library.illinoisstate.edu/jste/vol57/iss1/4>

Noble, R., & Ellis, C. (2025, July 15). *What's the alternative? How some alternative certification programs are shortchanging teachers and students*. National Council on Teacher Quality.  
<https://www.nctq.org/research-insights/whats-the-alternative-how-some-alternative-certification-programs-are-shortchanging-teachers-and-students>

Pathways Alliance. (2022). *Towards a national definition of teacher residencies*. Pathways Alliance.  
<https://educate.bankstreet.edu/pt/38>

Pathways Alliance. (2023). *Why apprenticeship models?* Pathways Alliance.  
<https://www.thepathwaysalliance.org/reports>

Pathways Alliance & American Association of Colleges for Teacher Education. (2024). *Essential elements of a registered apprenticeship in K-12 teaching: Fact sheet for educator preparation programs*.  
<https://www.thepathwaysalliance.org/reports>

Pathways Alliance & University of Tennessee. (2025). *Tennessee's teacher apprenticeship model and the power of tailored support*. Pathways Alliance. <https://www.thepathwaysalliance.org/reports>

Pierce, S., Boren, M., & Nadzam, J. (Eds.). (2025). *New teacher pathways and retention: Insights from Southern States*. Southern Regional Education Board and the Tennessee Education Research Alliance at Vanderbilt University. <https://www.sreb.org/publication/new-teacher-pathways>

Prepared To Teach. (2025, June 10). *New Mexico case study: Building a cohesive statewide teacher preparation system*. Prepared to Teach. <https://www.preparedtoteach.org/resources/the-time-is-now-strengthening-new-mexicos-educator-preparation-systems>

Prepared To Teach. (2023). *Registered apprenticeship programs and teacher residencies: Building shared understandings between workforce development and education* [Brief]. Bank Street College of Education. <https://educate.bankstreet.edu/cgi/viewcontent.cgi?article=1037&context=pt>

Putman, H., Ellis, C., Noble, R., & Peske, H. (2024). *Clinical practice framework: Six focus areas for effective student teaching* (Version 3). National Council on Teacher Quality.

Putman, H., & Walsh, K. (2025, March). A fair chance: Simple steps to strengthen and diversify the teacher workforce. National Council on Teacher Quality. <https://www.nctq.org/wp-content/uploads/2025/03/NCTQ-A-Fair-Chance-Final.pdf>

Rafa, A., & Roberts, M. (2020, August). *Building a Diverse Teacher Workforce*. Education Commission of

the States.

Ronfeldt, M. (2021). [\*Links among teacher preparation, retention, and teaching effectiveness\*](#). National Academy of Education Committee on Evaluating and Improving Teacher Preparation Programs. National Academy of Education. <https://doi.org/10.31094/2021/3/1>

Santos, F. (2025, February 6). [\*Aspiring teachers' financial burden survey\*](#). Prepared to Teach. <https://www.preparedtoteach.org/resources/aspiring-teachers-financial-burden-survey-spring-2024>

Sikes, C. L. (2025, September). Texas school funding – Major elements in House Bill 2. Intercultural Development Research Association (IDRA). [https://www.idra.org/education\\_policy/texas-school-funding-major-elements-in-house-bill-2/](https://www.idra.org/education_policy/texas-school-funding-major-elements-in-house-bill-2/)

Study.com. (2024). Study.com's Keys to the Classroom. <https://study.com/blog/study-com-s-keys-to-the-classroom.html>

Swisher, A. (2024). [\*A new roadmap for strengthening teacher diversity\*](#). National Council on Teacher Quality.

Teach Plus. (2019, September). [\*If you listen, we will stay: Why teachers of color leave and how to disrupt teacher turnover\*](#). Teach Plus.

Texas Education Agency. (2024). Effective Preparation Framework (EPF). <https://epf.tea.texas.gov/>

University of Maryland, Baltimore County. (n.d.). 13 key components. Meyerhoff Scholars Program. <https://meyerhoff.umbc.edu/13-key-components/>

The University of Texas at Austin. (n.d.). Report or file title. UT Box. <https://utexas.app.box.com/s/ec0x4nerh40irnrr2w3t47l6k4xlc6j>

U.S. Bureau of Labor Statistics. (2025, August 28). Employment in STEM occupations. <https://www.bls.gov/emp/tables/stem-employment.htm>

USAFacts. (2025, June 1). Who are the nation's teachers? Key insights in five charts. <https://usafacts.org/articles/who-are-the-nations-teachers/>

U.S. Department of Education, National Center for Education Statistics. (2024). Racial/ethnic enrollment in public schools. Condition of Education. <https://nces.ed.gov/programs/coe/indicator/cge/racial-ethnic-enrollment>



U.S. Department of Education, National Center for Education Statistics. (2021). Percentage distribution of teachers by ethnicity, race, school type, and selected main teaching assignment [Table NTPS 2021\_7182a\_T12n]. National Teacher and Principal Survey (NTPS), 2020–21. [https://nces.ed.gov/surveys/ntps/estable/table/ntps/ntps2021\\_7182a\\_t12n](https://nces.ed.gov/surveys/ntps/estable/table/ntps/ntps2021_7182a_t12n)

U.S. Department of Education. (n.d.). Title II Higher Education Act: Reports on teacher preparation and certification.

<https://title2.ed.gov/Public/Home.aspx>

Wei, W., García, E., DiNapoli, M. A., Jr., Patrick, S. K., & Leung-Gagné, M. (2025, February). In debt: Student loan burdens among teachers [Brief]. Learning Policy Institute. [https://learningpolicyinstitute.org/media/4567/download?inline&file=Student\\_Loan\\_Burdens\\_Among\\_Teachers\\_BRIEF.pdf](https://learningpolicyinstitute.org/media/4567/download?inline&file=Student_Loan_Burdens_Among_Teachers_BRIEF.pdf)

Yun, C., & DeMoss, K. (2020). [\*Sustainable strategies for funding teacher residencies: Lessons from California\*](#). Learning Policy Institute.