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**National Center
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Optimizing Teacher Residencies in Texas

Solutions to Expand Access to Secondary STEM and Other Disciplinary Major Candidates

2025 Report from the Secondary STEM Teaching Residency Advisory Group



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Secondary STEM Teaching Residency Advisory Group

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I. EXECUTIVE SUMMARY

Texas faces persistent shortages of certified secondary teachers, most acutely in mathematics, science, and computer science. Recently, Texas became the first state in the nation to create an “enhanced residency” teaching certificate to encourage expansion of residency programs. Teacher residencies are a promising response because they provide extended, coached practice integrated with coursework. Yet most current residency designs were built for education majors and often do not fit the schedules, advising needs, and content expectations of undergraduates pursuing disciplinary degrees. This matters because undergraduate disciplinary majors represent the largest pool from which to recruit future secondary teachers.

To address this gap, the National Center for STEM Education, with support from the Gates Foundation, led a two-year effort to reimagine residencies to improve access to these pathways for undergraduate disciplinary majors. During the first phase of the project, we worked with educator preparation programs (EPPs) across the state to understand what they valued about residency approaches and to document the barriers they faced expanding residency pathways—financing, governance, mentor capacity in secondary fields, and rigid clock-hour rules. In the second phase, we moved from problem identification to solution design. The advisory group, composed of practitioner experts and leaders from higher education, K–12 districts, and state and national stakeholders, reviewed Texas teacher production data, studied a secondary STEM-focused residency case, and reviewed the literature on residency policy, design, outcomes, and implementation. From this work we developed a set of actionable recommendations for preparation programs and policymakers.

FINDINGS

The advisory group of practitioner experts organized its final analysis around four categories of key elements that consistently distinguish high-quality residencies and are particularly relevant in the Texas context: partnerships and shared governance, co-teaching and mentorship, candidate recruitment and retention, and strategic staffing.

The literature points to a number of effective strategies for strengthening teacher preparation through residency and other clinically intensive pathways. First, partnerships and shared governance work best when they are mission-driven and student-centered, rather than transactional. Programs and districts benefit from internal alignment between university disciplinary departments and colleges of education before they formalize external agreements, followed by clear MOUs, joint data reviews, and, where feasible, regional governance to reduce duplication. Second, co-teaching and mentorship are most effective when mentors and residents are trained in structured models and when responsibilities evolve over time. Triad arrangements that include a faculty supervisor can be especially powerful because they ensure content-specific feedback and support inquiry-based pedagogy. Third, recruitment and retention of candidates from all backgrounds is improved when financial barriers are addressed, when culturally responsive mentoring and affinity supports are available, and when disciplinary faculty help reframe teaching as a respected career. Fourth, strategic staffing can create mutual benefit. Residents contribute tutoring, small-group instruction, or supervised substituting that advances program competencies while addressing district needs, provided there is strong supervision and alignment to learning goals.

A further analysis of the research-based benefits and best practices of residency program elements and structures against the unique challenges and constraints presented by undergraduate disciplinary majors seeking secondary teacher certification led to the following recommendations for reimagining residency pathways to improve access for more of these preservice candidates.

RECOMMENDATIONS

Two initial recommendations address 1) providing sufficient funding to make residency pathways a viable option for more preservice candidates and 2) revisiting specific requirements for required clinical hours to allow more flexibility, enabling more undergraduate majors to complete disciplinary coursework and residency requirements without adding time or cost to their degree. At the same time that educator preparation programs and policymakers consider greater flexibility for expanding access to more candidates, we recommend that high-quality, proven preservice preparation practices and structures are maintained. These include aligned and expanded governance, modernized clinical experiences and expectations, investment in mentors and residents, and use of strategic staffing to meet workforce needs while strengthening teacher development.

At the educator preparation program level, institutions should:

- create cross-college steering groups to co-design residency models that meet the unique needs of disciplinary majors.
- embed structured co-teaching or triad models as default practice.

- map clinical competencies to a range of high-quality activities that include co-teaching, approved simulation, and strategic staffing.
- re-sequence coursework so that residency participation does not extend time required to earn a degree.
- recruit and compensate disciplinary faculty for defined roles in supervision and governance.
- concentrate advising and mentoring resources in high-need certification areas where scheduling is more problematic.

At the state level, policy refinements and targeted funding can create the conditions for scale. Priority actions include:

- revisiting rigid clock-hour requirements and introducing flexibility so that disciplinary majors are able to complete field teaching requirements alongside upper-division disciplinary coursework. The state should consider pre-residency modules as creditable residency hours when they are supervised, assessed, and aligned to program competencies.
- recognition in Texas education rules of co-teaching, simulation, and clearly defined strategic staffing as creditable residency experiences with appropriate guardrails.
- statewide discipline-specific mentor training with stipends tied to coaching responsibilities.
- classification of clinical residents as full-time for financial aid.
- supplemental funding for advising and mentoring in shortage areas.

Texas has a timely opportunity to align the promise of residencies with the realities of secondary disciplinary preparation. The evidence and practitioner insights assembled here point to a pragmatic path. Programs can strengthen residency pathways by prioritizing proven practices and customizing program structures to address the unique needs of undergraduate disciplinary majors, while state policy can allow flexibility and provide additional supports to expand access to residency pathways to many more secondary certifiers.

II. BACKGROUND & PURPOSE

Texas faces chronic shortages of certified secondary teachers, particularly in high-need areas such as mathematics, science, and computer science. And while university-prepared teachers have been shown to stay in teaching and produce better student achievement outcomes than other teachers (Marder et al., 2022), their numbers have declined by 40% over the past decade (Marder, 2024). At the same time, the number of uncertified teachers has ballooned, accounting for 55% of newly hired teachers in 2023–2024 (Kirksey, 2024; Marder et al., 2024).

Teacher residencies have emerged as a promising approach for preparing highly effective educators, offering extended practice, close mentorship, and structured integration of coursework and fieldwork. While there is a limited body of evidence that residency programs lead to significant improvements in teacher practice and student achievement (Chu & Wang, 2022; Saunders et al., 2024), they have consistently been shown to attract and retain culturally diverse teachers through context-specific, clinically intensive preparation that better addresses the needs of K–12 partners than traditional higher education approaches (Saunders et al., 2024; Yun & DeMoss, 2020). This same body of research points to numerous challenges with teacher residencies, including sustaining the cost structures involved, ensuring adequate training and support for classroom mentors, and negotiating inconsistencies between research-based pedagogical approaches provided through coursework and the classroom practices modeled by K–12 mentors.

Recently, Texas became the first state in the nation to create an “enhanced residency” teaching certificate to encourage expansion of residency programs (Texas Education Agency, 2024b). But too few secondary teachers, especially in high-need subjects, are produced through residency pathways. Full-year teaching residencies can be uniquely challenging for

A Case Study: Secondary STEM Teaching Residency

The University of Houston’s teachHOUSTON program, a rare STEM-focused residency option for undergraduates across 22 disciplinary majors, provides a useful illustration of the challenges faced in connecting preservice teaching candidates to residency pathways. In teachHOUSTON, residents spend three days each week at their host school and two days on campus. Reported benefits include deeper engagement in professional learning communities and a smoother transition from full-time student to full-time educator.

However, coursework conflicts limit participation. In the program’s first three years, residency participation rates by undergraduate STEM majors seeking teaching certification were 22%, 39%, and 29%, respectively. As a result, the program must operate two parallel tracks, a yearlong residency and a one-semester clinical teaching option. A second constraint is the availability of high-quality STEM mentors. Although many mentors have been trained in co-teaching strategies, not all possess the pedagogical content knowledge needed to support STEM disciplinary majors. Given the broader trend in Texas toward hiring uncertified and underprepared teachers, program leaders noted that mentor capacity is an increasing concern that could affect the quality and scalability of the residency pathway.

undergraduates pursuing disciplinary degrees who also want to earn a secondary teaching credential (Hughes et al., 2024). Optimizing residencies to increase access for these students could lead to many more of them pursuing teacher certification through residency pathways.

To better understand the challenges and opportunities in secondary teacher preparation in Texas, the National Center for STEM Education launched a multi-year initiative with Gates Foundation's support. Phase 1 focused on identifying the opportunities, challenges, and barriers that residency pathways present for university-based pathways preparing secondary teachers for high-need subjects. Key issues surfaced included insufficient funding, governance challenges in educator preparation program–district partnerships, a limited supply of high-quality mentors in secondary fields, and logistical barriers tied to clock-hour residency requirements.

Our Phase 1 study (Hughes et al., 2024) found that both K–12 and higher education stakeholders in Texas valued the high-quality preparation provided by residency approaches to teacher preparation. They recognized the strength of connection that candidates develop with the school community, easing the transition into full-time teaching responsibilities and potentially improving retention in the classroom. They also placed a premium on university and K–12 district partnership and shared governance. However, stakeholders also acknowledged that too few secondary candidates are being prepared through residencies. They agreed on challenges to implementing residency approaches for secondary teacher development and identified needs for strengthening residency approaches. Significant challenges arise in preparing undergraduate disciplinary majors to become teachers through residencies. While undergraduate disciplinary majors represent the largest pool from which to recruit future secondary teachers in higher education settings, a year-long teaching residency is often not

Phase 1 recommendations included:

1. re-examine the number and distribution of required residency hours so candidates retain the benefits of yearlong classroom exposure while accommodating the course schedules of undergraduate STEM majors;
2. ensure sufficient funding to cover increased program costs associated with residencies;
3. prioritize outcomes by identifying which residency components most influence recruitment, production, quality, and retention, and by collecting and analyzing disaggregated data on the number of residents prepared and retained by subject and grade level; and
4. support and invest in all high-quality, clinically intensive preparation pathways across Texas.

See the report, *Optimizing Teacher Residencies in Texas: Considerations for Secondary STEM Candidates* (Hughes et al., 2024), for a detailed discussion of this first phase of the project.

III. METHODS

During Phase 2 of the project, the advisory group shifted its focus from problem identification to solution development. An expanded advisory group was reconvened and included representatives from Texas K–12 districts, education service centers, and university-based EPPs (both those with and without residency pathways in place); and three national educator development organizations: the National Center for STEM Education, the National Center for Teacher Residencies, and U.S. PREP. This working group of expert practitioners endeavored to reimagine the residency framework for secondary candidates in ways that address the challenges and barriers experienced by secondary candidates at university-based EPPs while preserving effective residency elements and practices.

The working group reviewed 39 articles, reports, and web resources. Some of the materials provided background and context for considering residency models and approaches. We reviewed reports on residency program components, standards, and best practices (Guha et al., 2016; National Center for Teacher Residencies, n.d.; Pathways Alliance, n.d.); Texas teacher workforce and state policy (Bland et al., 2023; Marder et al., 2024; Ralph & Bland, 2024; Texas Education Agency, 2024a; Wojcikiewicz & Wei, 2024); and research on outcomes and impact of residency and other clinically intensive approaches to teacher development (Backes et al., 2018; Bastian & Fuller, 2024; Bastian et al., 2024; Chu & Wang, 2022; Fitz & Yun, 2024).

Our initial review surfaced four key categories of residency model components for further study: partnerships and shared governance (Education First, 2018; Florez & Krebs, 2020; Goodlad, 1993; Hill-Jackson, 2023; Jones, 2025); co-teaching, mentorship, and clinical field teaching (Ansari Ricci et al., 2021; Bacharach et al., 2010; Dubek & Doyle-Jones, 2021; Goldhaber et al., 2022; Hsieh & Nguyen, 2015); recruiting and retaining candidates from all backgrounds (Azar et al., 2020; Cherng & Halpin, 2016; Saunders et al., 2024); and how strategic staffing intersects with preservice candidate development (Backes & Hansen, 2018; Education First, 2023; The Opportunity Culture, n.d.).

During a series of advisory group meeting sessions, expert practitioners consolidated a rigorous research base, reinforced shared priorities across programs and districts, and elevated concrete practices that link extended clinical experience, strong mentorship, and strategic staffing to better outcomes. They then formed four expert subgroups aligned to the key residency model components, and each subgroup examined a curated research base and exemplar models; drew on practitioner experience; and cross-walked insights to the specific constraints faced by disciplinary majors as well as to potential adjustments under Texas administrative code.

The teams surfaced validated practices, implementation risks, and equity implications, and then articulated near-term program actions alongside longer-term policy levers. The sections that follow synthesize these analyses for EPP leaders, district partners, and state decisionmakers,

highlighting what the evidence supports, where the field is encountering barriers, and how Texas can align program design and policy guidance to expand access to rigorous residencies for secondary disciplinary majors.

IV. FINDINGS

Below, we discuss in detail the evidence for maintaining and strengthening effective program elements in the four key residency model components identified by the practitioner experts: partnerships and shared governance; co-teaching, mentorship, and clinical experience; recruitment and retention of preservice candidates from all backgrounds; and the intersection of strategic staffing and preservice candidate development.

Partnerships & Shared Governance

Sustainable partnerships between EPPs and districts must be more than transactional arrangements. Rather than framing residencies simply as a staffing solution, both universities and districts benefit from co-developing student-centered missions and visions that elevate teaching and learning (Hill-Jackson, 2023; Jones, 2025). Districts can view residencies as a recruitment and retention strategy with measurable return on investment (e.g., reduced turnover, higher instructional quality), while universities can frame them as service to their communities and as opportunities to strengthen disciplinary preparation through meaningful field experiences. These perspectives align with Goodlad's (1993) seminal lessons on partnership development, which caution against quick fixes, cultural clashes, and under-structuring, instead urging institutions to commit to authentic collaboration and shared responsibility.

A central challenge identified by stakeholders was the “double-partnership dilemma”: Universities must first build internal collaborations between disciplinary

High-Quality Pathways: Outcomes and Impact

Residency programs tend to recruit, prepare, and retain more teachers of color than other pathways. In some studies, residents outperform other beginning teachers on measures of student achievement. Other high-quality, university-based models, including UTeach, also show evidence of enhanced teacher quality and retention relative to peers. Both residents and other university-prepared teachers generally outperform alternatively certified and uncertified teachers on retention and student performance metrics.

Shared Governance

Residencies thrive when EPPs and districts co-develop student-centered missions, with clear MOUs and regional collaboration models.

faculty and schools/colleges of education before launching external partnerships with districts. Without integration of content and pedagogy, residency programs risk marginalizing disciplinary majors or failing to prepare candidates for the realities of secondary teaching. Exemplars such as the Albuquerque Teacher Residency Partnership (Florez & Krebs, 2020) demonstrate how cross-institutional teams—including district leaders, unions, and university faculty—can design feedback loops and joint decision-making structures to strengthen both coursework and clinical practice. Similarly, Professional Development School models (Kolpin, Shoemaker, & Cary, 2018) underscore the importance of governance structures, readiness assessments, and continuous improvement cycles for sustaining partnerships across time.

Several practical strategies are offered for operationalizing school–university partnerships, many of which are detailed in the Education First *Partnering on Prep* toolkit (2018). These include engaging people who have decision-making authority, aligning language and rubrics across institutions, conducting joint mentor training, and reviewing candidate performance data collaboratively. Incentives such as stipends for mentor teachers, targeted funds for disciplinary advising, and initial support for frequent meetings are noted as critical enabling conditions. Finally, practitioner experts recommend exploring regional governance models that coordinate across multiple EPPs and districts, reducing duplication of effort while strengthening collective capacity. Taken together, these recommendations underscore that shared governance in residency design is not only about logistics, but about cultivating enduring communities of practice, both inside and outside the university, that improve outcomes for both teacher candidates and students.

Co-Teaching, Mentorship, & Clinical Field Experience

There is strong evidence that co-teaching improves both candidate preparedness and student outcomes when structured intentionally. Bacharach and colleagues (2010) demonstrated statistically significant gains in reading and mathematics for K–6 students in co-taught classrooms. Structured co-teaching models in secondary math and science classrooms were shown to support inclusive practices and student learning (Ansari Ricci et al., 2021). Effective co-teaching requires more than assigning residents to classrooms; it involves systematic training for mentors and candidates, shared planning and reflection, and evolving responsibilities over time (Guise et al., 2017). Mentorship was reframed as a holistic role encompassing emotional support, reflective dialogue, and professional learning for both mentor and resident (Grimmett et al., 2018).

Co-Teaching

Structured co-teaching improves candidate readiness and student outcomes.

Exemplars such as the Jacksonville Teacher Residency (Wilson et al., 2023) show that co-teaching, particularly when organized as a triad with a university supervisor, can yield measurable student achievement gains in secondary classrooms. Similarly, Dubek and Doyle-Jones (2021) highlighted the benefits of university faculty co-teaching alongside candidates in STEM contexts, bridging the theory–practice divide and strengthening pedagogical content knowledge. However, gaps remain in aligning co-teaching strategies with disciplinary expertise.

Recruitment & Retention of Preservice Candidates from All Backgrounds

Persistent barriers deter undergraduates, especially those from underrepresented groups, from pursuing residency pathways. Financial constraints, misconceptions about teaching as a career (particularly in STEM), and lack of institutional support were identified as significant challenges (Bristol et al., 2020; Carver-Thomas, 2018). Residency models that are mission-driven, community-rooted, and culturally responsive have been shown to increase persistence and retention, particularly for teachers of color (Azar et al., 2020). Research further indicates that affinity groups and mentorship tailored to the individual needs of teachers foster belonging, self-efficacy, and professional resilience (Bristol et al., 2020).

Exemplars such as the Get the Facts Out initiative (Chasteen, 2022) illustrate how shifting faculty and student perceptions of teaching in STEM fields can reframe the profession as an intellectually rewarding and socially impactful career. Likewise, the Black Educators Initiative within the National Center for Teacher Residency (NCTR) network demonstrates how targeted financial and mentoring supports can diversify residency cohorts and improve retention (Goggins & Levay, 2023). Nevertheless, gaps remain in efforts to engage STEM disciplinary faculty in promoting teaching as a viable pathway and providing content-specific mentoring that reflects the realities of secondary classrooms.

Recruitment and Retention

Paid residencies, affinity groups, and culturally responsive supports increase persistence of candidates of color. Partnerships with STEM faculty can reframe teaching as a respected career.

Research suggests that educator preparation programs can increase success by creating intentional structures—such as paid residency options, affinity groups, and faculty informational campaigns and incentive systems—to recruit and support candidates from all backgrounds.

Strategic Staffing & Preservice Candidate Development

There are benefits to aligning candidate development with district workforce needs as well as challenges related to sustaining program design changes over time. Literature on strategic staffing models shows that residents can add measurable instructional value by tutoring, co-teaching, or substituting while completing their preparation (Backes & Hansen, 2018; Education First, 2023). Such contributions not only enhance candidate practice but also address district staffing challenges. However, practitioner experts emphasize that meaningful integration requires careful planning, particularly in ensuring residents are recognized as full-time students eligible for financial aid, maintaining instructional quality, and protecting the resident's time to prepare for their primary duties as an instructor in their mentor teacher's classroom.

Exemplars from Denver, Boston, and Texas Strategic Staffing initiatives illustrate how districts have restructured staffing models to incorporate residents in sustainable, compensated roles (Education First, 2023; Texas Education Agency, n.d.). These models leverage distributed leadership, differentiated pay, and team-based approaches to extend the reach of experienced teachers while building the pipeline. Yet, undergraduate disciplinary majors often face unique barriers: fewer high-quality mentors in specialized content areas, rigid course sequencing that limits flexibility, and the potential lack of institutional policies to classify residents as full-time for financial aid eligibility.

Recommendations supported by the literature include allowing strategic staffing contributions (e.g., tutoring

Strategic Staffing

Residents can meaningfully contribute to district needs by providing tutoring, substitute teaching, and small-group instruction while completing preparation. Policy changes can classify these roles as valid residency hours.

or substitute teaching) to count toward residency hours, incentivizing joint planning between EPPs and districts to align placements with workforce needs, and creating policy mechanisms that guarantee financial aid eligibility for residents.

Cross-Cutting Themes & Implications

Taken together, these four categories of program elements emerged as a consistent set of priorities and tensions that shape the design of effective residency models for secondary disciplinary majors. There was broad consensus among working group expert practitioners about the importance of authentic school–university collaboration, where shared governance structures and MOUs anchor long-term partnerships and ensure that residencies serve both candidate development and district workforce needs. Similarly, they agree that clinical practice must be meaningful, with structured co-teaching, intentional mentorship, and opportunities for residents to function as genuine instructional partners rather than assistants. The importance of strategic and intentional recruitment and retention efforts is seen as foundational to sustaining high-quality programs. Strategic staffing models offer unique benefits, when carefully structured, to optimize the development of teaching residents while providing mutual benefit to partner districts.

At the same time, several tensions must be resolved. Universities face the practical challenge of reconciling disciplinary major courseloads with the time-intensive structure of yearlong residencies, while districts must balance the short-term costs of mentoring and staffing with the long-term return on investment in bolstering teacher pipelines. Questions of equity and access cut across discussions, with financial constraints, rigid scheduling, and limited content-specific mentors disproportionately affecting disciplinary majors. Finally, expert practitioners acknowledged that while innovation is critical—through strategies such as modular residencies, simulation technologies, and strategic staffing roles—such flexibility must not dilute standards for high-quality preparation.

Our analysis highlights both the promise and the complexity of reimagining teacher residencies for secondary disciplinary majors in Texas. While the findings underscore clear areas of agreement—such as the centrality of authentic partnerships, high-quality co-teaching, financial and cultural supports for candidates of all backgrounds, and integration with strategic staffing—they also surface tensions that cannot be resolved by programs alone. Educator preparation programs and districts have limited capacity to address structural issues such as financial aid eligibility, sustainable mentor stipends, or the alignment of residency requirements with disciplinary courseloads without state-level policy guidance and investment.

Collectively, the findings suggest a dual agenda for Texas: educator preparation programs should adopt proven practices that ensure high-quality preparation to teach, while the state should create enabling policies and funding structures that expand access to residencies for disciplinary majors and sustain these partnerships at scale. This includes incentives for mentor

teacher development, stipends and supports for residents, recognition of alternative activities and increased flexibility around residency clock-hour requirements, and governance models that bring together disciplinary faculty, EPP leaders, and district partners. By aligning these elements, Texas can build a residency system that is rigorous, equitable, and responsive to the realities of secondary teacher preparation. We discuss these recommendations in more detail in the next section.

IV. RECOMMENDATIONS

Advancing high-quality residencies for secondary disciplinary majors requires **two levels of action**: 1) program-level innovations that educator preparation programs and district partners can adopt directly, and 2) state-level policy and funding mechanisms that create conditions for these innovations to take root and scale.

Educator preparation programs should adopt proven practices that ensure high-quality preparation to teach, while the state should create policies and funding structures that expand access to residencies for disciplinary majors and sustain these partnerships at scale.

The recommendations that follow are therefore presented in parallel format, with program actions paired alongside state supports. This structure reflects the conviction that meaningful reform cannot rest on programs or districts alone but depends on a coordinated system of local practice and state-level support and investment. Together, these recommendations reflect a shared vision: a teacher residency model that is rigorous, equitable, and adaptable to the unique needs of secondary disciplinary majors, while also strengthening the broader teacher pipeline in Texas in targeted ways.

Table: Program-Level Actions and State-Level Supports

FOCUS AREA	PROGAM-LEVEL ACTIONS	STATE-LEVEL SUPPORTS
Shared Governance	Build internal partnerships (disciplinary + education faculty); align MOUs; engage in joint data use	Incentivize partnerships with grants; require regional governance models; provide supplemental funding for high-need fields
Co-Teaching & Mentorship	Embed structured co-teaching; provide pre-placement training; implement triad mentorship	Require documentation in EPP approval; fund discipline-specific mentor training/stipends; recognize diverse residency hours
Recruitment & Retention	Provide candidate supports; partner with disciplinary faculty to reframe teaching; support development of local pipelines	Provide stipends for cost-of-living expenses; fund candidate support activities; incentivize faculty through service credit or stipends
Strategic Staffing	Integrate residents into instructional teams; align placements with workforce needs	Allow strategic staffing to count toward hours in TAC \$228.65; classify residents as full-time students; expand residency stipends

1. School–University Partnerships & Shared Governance

Program-Level Actions: Begin by building internal alignment between disciplinary faculty and colleges/schools of education by collaborating on program design. Create a cross-disciplinary steering committee to co-design the residency pathway. This not only ensures that the needs and circumstances of disciplinary majors are considered but also creates opportunities to develop support among disciplinary faculty for choosing teaching as a career and to negotiate degree plan requirements to accommodate field teaching. With a strong collaborative foundation in place, roles and responsibilities can be formalized through MOUs that outline the contributions of partner districts, mentor teachers, and university faculty, and that include aligned rubrics and shared expectations for candidate development. Finally, programs should institute routine, joint data reviews and coordinated site visits so partners can monitor implementation, identify problems of practice, and drive continuous improvement together.

State-Level Supports: Policymakers can offer competitive grants and stipends that recognize the time and expertise of district staff who host residents. They can further strengthen the system by supporting regional governance structures that convene multiple EPPs and K–12 districts, reducing duplication and expanding high-quality placements. Finally, the state can provide supplemental funding for EPPs in high-need disciplines, such as STEM, where the administrative demands of residencies—including intensive student advising—are greater.

2. Co-Teaching, Mentorship, & Clinical Field Experience

Program-Level Actions: Programs should make structured co-teaching the default clinical model and design a clear progression that moves candidates from guided observation to shared instruction and then to independent teaching with ongoing support. They should also provide pre-placement training in co-teaching strategies for both mentors and residents so that planning, instruction, and assessment are truly collaborative from the start. Where feasible, they should implement a triad mentorship structure that includes the resident, the mentor teacher, and a faculty supervisor to ensure regular, content-specific feedback, which is especially critical in secondary STEM. Programs should design a sequenced set of pre-residency modules aligned to program competencies that can be used to fulfill the clock hours required for a portion of the yearlong residency.

State-Level Supports: Require residency programs to document structured co-teaching models in program approval and renewal processes, including how responsibilities progress and how feedback is delivered. The state should fund statewide mentor teacher training tailored to disciplinary placements, and tie stipends to completion of training and ongoing coaching responsibilities to build mentor capacity. They should update policy to recognize co-teaching hours, high-fidelity simulation, and clearly defined strategic staffing roles as creditable components of required residency hours, with guardrails for supervision and assessment. Finally, the state should prioritize indicators of quality teaching practice over rigid clock-hour

requirements and introduce flexibility so that disciplinary majors are able to complete field teaching requirements alongside upper-division major coursework. The state should consider pre-residency modules as creditable residency hours when they are supervised, assessed, and aligned to program competencies.

3. Recruiting & Retaining Preservice Candidates from All Backgrounds

Program-Level Actions: Programs should strengthen recruitment by supporting community-rooted pipelines—such as dual-credit partnerships, targeted transfer pathways, and grow-your-own initiatives in high-need subjects—that connect local talent to supported residency opportunities. They should also intentionally recruit undergraduate majors to teaching pathways by allocating additional advising supports and developing outreach courses that provide early opportunities for them to explore teaching. Programs can further support recruitment and retention of candidates from all backgrounds by establishing affinity groups and structured mentorship that foster belonging and persistence. Programs should prioritize collaborating with disciplinary faculty to position teaching as a rigorous, respected career choice and to counter common misconceptions about teaching among both faculty and undergraduate majors.

State-Level Supports: The state should reduce financial barriers by offering paid residency options with stipends and targeted supports such as housing or transportation allowances. They should provide funding to develop and expand onramps to teaching, including community-rooted programs and innovative exploratory college coursework, and incentivize deeper engagement from disciplinary faculty by recognizing teacher preparation contributions through service credit, release time, stipends, and priority points in competitive grants, thereby strengthening content-specific mentorship and program capacity in high-need fields.

4. Strategic Staffing & Candidate Development

Program-Level Actions: Programs must ensure that residents are integrated into instructional teams in clearly defined roles—such as tutoring and small-group instruction—so that their contributions map directly to program competencies and developmental goals. They should collaborate with district partners to prioritize placements in campuses that align with local workforce needs and documented shortage areas. And they should adjust coursework sequencing, utilizing non-placement days and aligning assessment windows so residents can complete clinical expectations without missing required content courses.

State-Level Supports: The state should amend educator preparation rules so that clearly defined strategic staffing contributions count toward required residency hours in 19TAC §228.65. They should require institutions to classify clinical teaching residents as full-time for financial aid purposes and expand state funding for residency stipends, tied to district–university cost-sharing plans with safeguards for role clarity, supervision, and measurable outcomes to ensure sustainability. The state should also provide small program redesign grants to support course sequencing and schedule alignment in high-need disciplines.

IV. FURTHER RESEARCH

This work highlights both promising strategies and persistent gaps that require additional study. At the academic level, further research is needed to examine how residency models can be adapted for disciplinary majors without diluting rigor in content preparation. This includes investigating the effectiveness of modular or tiered residencies, the impact of mentorship on candidate learning in secondary disciplines, and the role of simulation-based practice in supplementing clinical hours when mentor availability is limited. Longitudinal studies that follow disciplinary majors from preparation into early career teaching would also provide valuable evidence about retention, instructional quality, and student outcomes.

At the policy level, additional research is needed to inform decisions about scaling and sustaining residency programs in Texas. Key questions include: What financial models most effectively balance state, institutional, and district investments? How might adjustments to 19 TAC §228.65 expand access to high-quality residencies while maintaining rigor? What incentives most effectively engage disciplinary faculty in teacher preparation programs, and what policy mechanisms boost recruitment and retention of teacher candidates from all backgrounds? Finally, comparative analyses of Texas residency models with those in other states could provide lessons for aligning standards, funding, and accountability to meet workforce needs.

By pursuing these lines of inquiry, Texas can continue to refine its approach to teacher residencies, ensuring that programs not only attract disciplinary majors into teaching but also prepare them to support student achievement and remain in the profession long-term.

V. CONCLUSION

The recommended actions directly address the constraints commonly experienced by undergraduate disciplinary majors interested in pursuing teaching certification through residency pathways: course schedule conflicts, insufficient content-specific feedback, limited recognition of high-quality clinical work beyond required clock hours, and uneven resources for advising and mentoring. Pairing program redesign with enabling policy addresses these constraints at their source. Programs can strengthen residency pathways by prioritizing proven practices and customizing program structures to address the unique needs of undergraduate disciplinary majors, while state policy can allow additional flexibility and provide additional supports to expand access to residency pathways to many more secondary certifiers.

Texas has a timely opportunity to align the promise of residencies with the realities of secondary disciplinary preparation. The evidence and practitioner insights assembled here point to a pragmatic path: re-examine the number and distribution of required residency hours so candidates retain the benefits of yearlong classroom exposure while accommodating the course schedules of undergraduate STEM majors; build authentic EPP–district partnerships that include disciplinary

faculty from the start; structure clinical practice around co-teaching and mentorship; protect students' progress toward rigorous content degrees through flexible, competency-anchored clinical hours; and sustain the work with targeted funding for mentors, residents, and advising in high-need subjects.

These changes will make residency participation feasible for more disciplinary majors without compromising rigor, and they will strengthen the teacher pipeline in documented shortage areas.

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