PROJECT NARRATIVE

Project Services

The University of South Carolina – Transition to Teaching Program (T^3) addresses the 2019 Teacher Quality Partnership Grant Program *Absolute Priority:* **Partnership Grants for the Establishment of Effective Teaching Residency Programs, Competitive Preference Priority 1: Projects designed to improve student achievement in computer science by increasing the number of STEM educators, and the** *Invitational Priority***: Spurring Investment in Opportunity Zones**. The University of South Carolina (UofSC) College of Education as lead agency, in partnership with the UofSC College of Arts and Sciences and the UofSC College of Engineering and Computing, will collaborate with K-12 school partners to (a) create a model teaching residency programs for individuals with strong academic and/or professional backgrounds who are without teaching experience, (b) ensure that participants are able to receive a Master's degree and full teaching certification or licensing within fourteen months, (c) provide participants with a living stipend for 12 months in exchange for an agreement to serve in a high-need school of a partner high-need LEA for no less than three years, and (d) support teacher residents through a 3-year induction into the teaching profession.

The T^3 project model is grounded in practice-based approaches to teacher development. These approaches emphasize learning to teach by practicing strategies in authentic classroom settings. In this model, authentic classroom settings are established in the same schools and communities where teaching residents will eventually become classroom teachers by (a) embedding the teaching methods courses teacher candidates take within local elementary and middle school classrooms and (b) creating Summer Institutes where students come for academic enrichment experiences. Across both settings, university faculty work side-by-side with

classroom teachers, clinical experience supervisors, teacher residents, and teacher candidates to enact best teaching practices (e.g., medical training approaches applied to teacher training). We will merge these methods with a teacher residency component and establish school-based sites where these methods can be documented and shared.

The T^3 project is also designed to address **Competitive Preference Priority 1** by promoting science, technology, engineering, and math (STEM) education, with an emphasis on computer science and digital literacy. Our goals are to improve access to learning opportunities and achievement outcomes in STEM and computer science for students in residency classrooms and partner schools and promote effective instruction in classrooms and schools that serve T^3 students. The T^3 program is a residency graduate program designed for professionals who are interested in transitioning from their current professions to becoming teachers in South Carolina and hold college degrees in fields other than education. Additionally, T^3 will focus on increasing the recruitment and retention of educators who reflect the diversity of students served across South Carolina. While racial, ethnic, cultural, and learning differences are in need of particular attention in our state, the T^3 project also addresses linguistic, socioeconomic, and gender diversity, which are particular concerns in STEM and computer science classrooms.

Services provided involve collaboration among multiple appropriate partners to maximize program effectiveness: elementary and middle level schools, UofSC College of Education, Center for Science Education in the UofSC College of Arts and Sciences, UofSC College of Engineering and Computing, South Carolina Center for Children's Books and Literacy in the UofSC College of Information and Communications, UofSC Professional Development School Network, The Carolina Teacher Induction Program (Carolina TIP), and

UofSC College of Education's Research, Evaluation and Measurement (REM) Center (*See Appendix I for Letters of Support*).

Several critical bodies of scholarship in teacher education and mentoring research provide the empirical foundation for the T^3 model: ambitious teaching practices (Lampert, Franke, Kazemi, Ghousseini, Turrou, Beasley, Cunard, & Crowe, 2013); embedded and exploratory teaching model (Thompson & Emmer, 2019; Lotter, Thompson, Dickenson, Smiley, & Rea, 2017; Lotter, Smiley, Thompson, & Dickenson, 2016); effective teacher education models, (Zeichner, 2002); teacher learning and mentoring (Schwille, 2008); and tenets of high-quality professional development (Garet et al., 2001). Theoretically, these initiatives are grounded in social cognitive theories of learning (e.g., Bandura, 1986). The activities are of sufficient quality, intensity, and duration to lead to improvements in practice among participating schools and districts. The *quality* of activity is evident in the proposed implementation of learning activities that involve modeling, observation and multi-dimensional assessment of student learning, inquiry methods, guided practice-teaching opportunities, and extensive embedded and mentored field experiences. *Intensity* is established through ongoing and layered courses and teaching in authentic classroom settings alongside capable and fully supported mentor teachers, university supervisors, university faculty, and multi-disciplinary exploratory experiences. The *duration* of residency and induction (four-year total) provides the time needed for robust professional growth and enhances the likelihood that these teacher candidates will remain in the teaching profession.

To evaluate the effectiveness of this T^3 teacher residency program, the following measurable goals will be assessed as described in the project evaluation section below:

- **Measurable Goal 1:** Increase recruitment of teachers who come from diverse backgrounds through an innovative residency program that is accessible and affordable.

- **Measurable Goal 2:** Increase the number of qualified and certified teachers in South Carolina.

- **Measurable Goal 3**: Increase the effectiveness of teacher residents and induction teachers through clinical experience, coursework, mentorship, and feedback using valid measures focused on literacy across the curriculum and inquiry-based STEM instruction with an emphasis on computer science and digital literacy.

- **Measurable Goal 4:** Increase retention of effective teachers through residency program and subsequent induction process that provides teaching experience, professional development, and support to meet the needs of teachers during their residency year and induction years.

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Project Design

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University of South Carolina – Transition to Teaching (T³)

The University of South Carolina – Transition to Teaching (T³) program is a residency graduate program designed for professionals who are interested in transitioning from their current professions to becoming teachers in South Carolina and hold college degrees in fields other than education. During the fourteen-month residency program, T³ Fellows will be provided both professional and financial support as they pursue a Master's Degree in Teaching (M.Ed). Specifically, candidates accepted as T³ Fellows will be enrolled in the Master's Degree program and provided a living wage stipend as they co-teach alongside classroom-based coaching mentors from our partner LEAs. Simultaneously, they will be enrolled in graduate coursework in the College of Education at UofSC, providing the T³ Fellows with the opportunity to connect practice to coursework

as they pursue their graduate degree. The program has two tracks (i.e., Elementary and Middle Level) that follow the model shown in Figure 1.
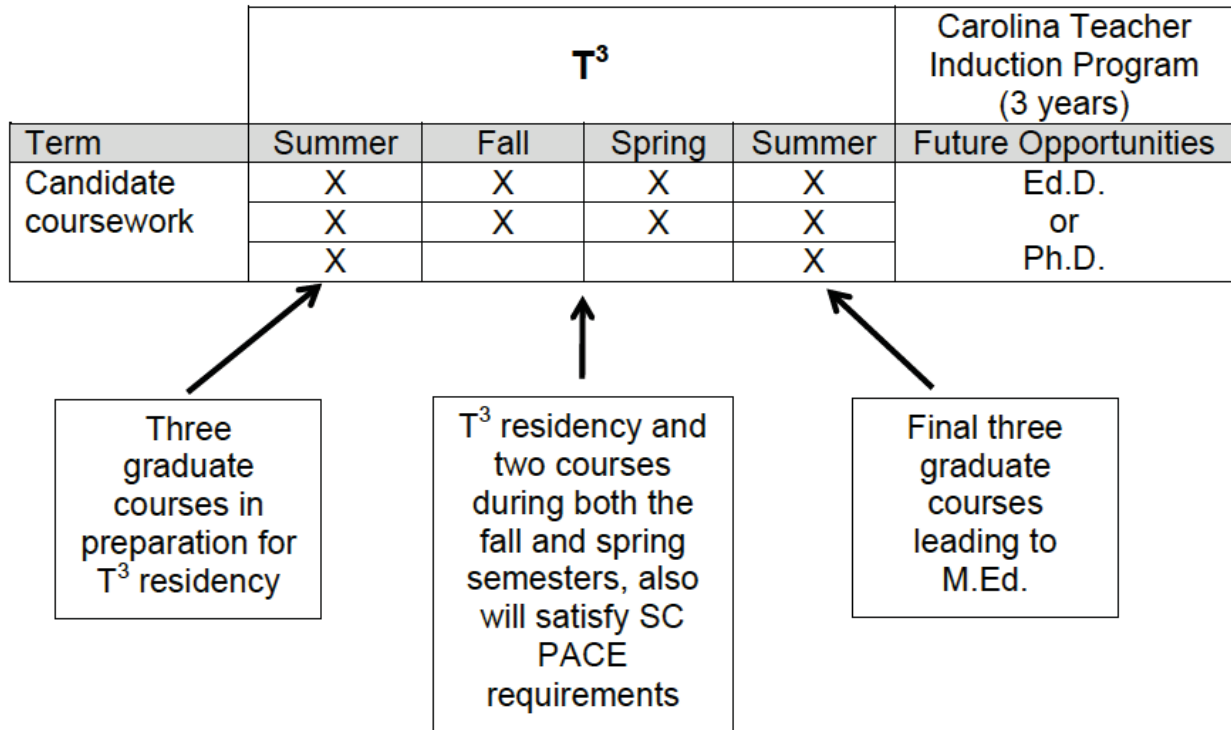
	T³				Carolina Teacher Induction Program (3 years)
Term	Summer	Fall	Spring	Summer	Future Opportunities
Candidate coursework	X	X	X	X	Ed.D.
	X	X	X	X	or
	X			X	Ph.D.

Three graduate courses in preparation for T³ residency

T³ residency and two courses during both the fall and spring semesters, also will satisfy SC PACE requirements

Final three graduate courses leading to M.Ed.

Figure 1: University of South Carolina T³ Model

Upon T³ program completion and continuing until the conclusion of there additional years of teaching, T³ Fellows will also be provided professional support through the Carolina Teacher Induction Program (Carolina TIP). Specifically, after completing their M.Ed., a T³ Fellow will be enrolled in the Carolina TIP and will receive three additional years of university support with the overarching goal to increase teacher retention and success in the classroom.

Project Rationale (Need/Justification for Four Goals)

South Carolina faces significant and increasing challenges in teacher recruitment and retention. For example, the 2018-2019 *South Carolina Annual Educator Supply & Demand Report* (Center for Educator Recruitment, Retention, and Advancement [CERRA], 2018-2019) reveals that administrators faced a 29% increase in teacher vacancies since 2016-17, due in large

part to one-quarter of new teachers (25%) who began their teaching careers in 2017-18 not returning to a South Carolina public school in 2018-19. The number of teacher vacancies increased across almost all grade levels with approximately 50% occurring in elementary schools, 21% in middle schools, and 28% in high schools. Recent South Carolina legislative action further compounds South Carolina teacher shortages as incentives that have kept recently retired teachers in the classroom are being eliminated. In addition to overall teacher shortages, the percent of newly hired teachers who are male (18%) or who are minority teachers (22%) are far lower than percentages of teachers who are males and minorities in South Carolina's general population which continues existing trends within the South Carolina teaching population. Further, the percent of new teachers who are graduates of South Carolina teacher education programs has declined by 32% since 2012-2013 (Garett, 2019). Trends in South Carolina mirror the national trends identified by Ingersoll, Merrill, and Stuckey (2014) who highlight the "greening" trend within the workforce where beginning teachers increasingly comprise a growing proportion of the workforce. Collectively, these factors have contributed to the increasing instability of the teaching workforce with approximately a 9% attrition rate in the overall teaching workforce in 2009, as compared to only 6.4% in 1989.

The College of Education at UofSC is well-positioned as the lead agency for the T[3] program because it is committed to offering high-quality, accessible, and affordable teacher education programs to meet the needs of South Carolina, while increasing the diversity among the teaching workforce in the state, as well as addressing the development and retention of effective teachers. Although currently there is no state reporting in terms of a report card for teacher preparation programs, both the Elementary and Middle level program in the College of Education have a greater than 85% pass rate on subject specific and pedagogical licensing exams

(i.e., Praxis Subject Area and Praxis PLT). Founded in 1801, the University of South Carolina is the flagship state institution of higher education; its mission includes the following commitments:

- Bridging gaps among theory, research and practice to promote excellence in teaching and learning within and across educational contexts

- Conducting principled, free inquiry that include and honor diverse perspectives while promoting quantitative and qualitative scholarship to advance knowledge and educational practice

- Partnering with government agencies; P-12 educators, schools, and districts; families; professional organizations; and other institutions of higher education; and

- Preparing educators to develop and sustain a sincere understanding and appreciation of diversity as they challenge themselves and others to work for social justice.

The Teacher Quality Grant Program (TQP) offers resources to address these compelling challenges related to teacher recruitment, retention, and effectiveness. In short, through this partnership, the UofSC College of Education will meet the goals articulated in the Absolute Priority including (a) create a model teaching residency program that integrates pedagogy, classroom practice, and teacher mentoring for individuals with strong academic and/or professional backgrounds but without teaching experience; (b) establish cohorts of teaching residents who engage in rigorous graduate-level course work leading to a master's degree while undertaking a guided teaching apprenticeship; (c) provide opportunity to learn and gain expertise alongside a trained and experienced mentor teacher; and (d) support teaching residents after they are hired as teachers of record, through an induction program, professional development, and networking opportunities through their first three years of teaching.

Absolute Priority: Establishment of Effective Teaching Residency Programs

Goal 1: Create a South Carolina Model Teaching Residency Program

During the 2019-2020 academic year, T^3 faculty and LEA partners will engage in program-related recruitment efforts that occur in targeted communities and focus on attracting local residents into the teaching profession via the T^3 program. In Summer 2020, following a year of organization and preparation, the College of Education at the University of South Carolina will invite 24 T^3 Fellows to participate in the inaugural *T^3 Fellows cohorts (one elementary cohort and one middle level cohort)*. These T^3 programs will be built upon an existing set of online courses and embedded methods courses and will initially partner with two LEAs across the State of South Carolina. Not only will this Teaching Residency Program extend the work of the College of Education across the state of South Carolina to rural schools that are at particular risk of attracting and retaining teachers, but it will also serve as a model residency program that can be implemented in other schools and districts across the state.

Goal 2: Establish cohorts of teaching residents who engage in rigorous graduate-level course work leading to a master's degree while undertaking a guided teaching apprenticeship

The initial cohorts of the T^3 teaching residents and mentor teachers will engage in preliminary coursework and mentor training early in the summer of 2020. Following the preliminary coursework and training, these groups will engage in collaborative teaching, reflection, and mentoring in authentic classroom settings during the Summer I Institute. The teaching engagements will occur within summer academic enrichment experiences for students who are recruited by the partnering LEAs. Students who attend are provided with academic enrichment centered on state education content standards, with an emphasis placed on newly

adopted state standards for computer science and digital literacy. The T[3] program uses these settings to engage teaching residents and mentor teachers in initial practice teaching/mentoring experiences and to establish foundations for future teacher residents/mentor teacher interactions.

The T[3] program also involves clinically embedded methods classes and field experience in high-need partner LEA schools where university faculty, mentor teachers, and teacher residents work side-by-side in classroom settings to enact and investigate research-based teaching approaches. The embedded methods courses are held in local partner district schools and focus on practice-based experiences within authentic classroom settings, curriculum enactment utilizing research-based approaches, opportunities to contextualize instructional theories, and the intentional modeling of ambitious teaching practices (Lampert, Franke, Kazemi, Ghousseini, Turrou, Beasley, Cunard, & Crowe, 2013).

Goal 3: Provide teaching residents with guided experience and learning opportunities alongside a trained and experienced mentor teacher

T[3] Fellows and mentor teachers engage in collaborative teaching and reflection following common protocols with similar points of emphasis during Summer Institute experiences. These practices are continued into the academic year as T[3] Fellows and mentor teachers work side-by-side within common clinical field experience classrooms to enact targeted teaching practices. The guided learning opportunities are enhanced as university faculty, T[3] faculty, and mentor teachers craft embedded methods coursework and experiences that occur within partner LEA classroom settings. The embedded methods course experiences act as a catalyst to promote the professional growth of T[3] Fellows and mentor teachers, while also raising the overall quality of instruction within the targeted LEA clinical field experience sites.

Goal 4: Support teaching residents during their first three years in the classroom through an induction program

Following the four semesters that lead to teacher certification, both elementary and middle school T³ Fellows will participate in three years of the Carolina Teacher Induction Program (TIP). During these three years, Carolina TIP will serve as a bridge between the university and the classroom, providing support in clinical application of pedagogical theory for novice teachers. Carolina TIP operates in partnership with LEAs to positively impact student learning as well as teacher efficacy and retention. UofSC faculty and Carolina TIP staff, with expertise in instructional support and the licensure areas, will partner with T³ LEAs to provide additional layers of induction support for the first three years of T³ Fellows' careers.

Eligible Partners

In order to determine LEA partners the 2017 Poverty Estimate for School Districts released by the U.S. Census Bureau, Small Area Income and Poverty Program (SAIPE) was used to compile a list of SC districts where the Poverty Rate for children ages 5-17 was greater than 20%. This list was then cross-referenced with the teacher turnover rate greater than 15% from the 2018 SC School Report Card data. This resulted in twenty-one school districts (e.g., Orangeburg 4, Colleton) that will be our target partners during the project timeline. Both T³ program partners meet the eligibility requirements for a high-need LEA and a high-need school (Table 1).

Table 1

High Need LEA Partner Districts and Schools

High-Need LEA	% of Children from Low Income Families/Eligible for FRPSL	% of Teacher Turnover
Orangeburg School District 4	27.92%	17.3%
High-Need Schools in Orangeburg School District 4		
Edisto Elementary School	81.1%	
Hunter Kinard Tyler Elementary	89.7%	

Carver Edisto Middle School	81.2%	
Colleton County School District	36.2%	20.6%
High-Need Schools in Colleton County School District		
Bells Elementary	91.3%	
Cottageville Elementary School	85.8%	
Forest Hills Elementary School	85%	
Hendersonville Elementary	92%	
Northside Elementary School	85%	
Colleton County Middle School	79.7%	

Further, the T[3] project will serve students who reside in Qualified Opportunities Zones as described in the call for proposals. Table 2 summarizes census tract numbers of the qualifying opportunity zones served by the T[3] project.

Table 2

Qualified Opportunities Zones Served by T[3]

State	County	Census Tract Number
South Carolina	Colleton	45029970401
South Carolina	Colleton	45029970402
South Carolina	Orangeburg	45075010200
South Carolina	Orangeburg	45075010600
South Carolina	Orangeburg	45075011300
South Carolina	Orangeburg	45075011400

The T[3] geographic regions include several opportunity zones, and only LEAs that include opportunity zones are partners in this initiative. These factors assure that students in these opportunity zone communities will be served by, and benefit from, the proposed project.

Project Description

The T^3 teacher residency program emphasizes the integration of pedagogy, classroom practice, teacher mentoring, and collaborative support. The ambitious residency program establishes a multi-pronged and sustainable approach to teacher development and retention. Central to our work are two existing initiatives that have come to characterize teacher education at the University of South Carolina: the UofSC Professional Development Schools Network (PDS) and clinical embedded methods classes and field experiences.

The UofSC Professional Development Schools Network. For more than 25 years, the UofSC PDS Network has been an integral part of educator preparation at UofSC. With 21 active schools, including twelve elementary schools and five middle schools in five Midlands South Carolina school districts, the PDS Network fosters vibrant partnerships that allow us to leverage expertise from all constituents to improve teaching and learning in area schools and at the university. Currently, the elementary and middle school certification programs maintain strong PDS partnerships with schools and districts in the Columbia area. Collaborations between UofSC and PDS Schools are central to our teacher education programs and the embedded clinical experiences that we offer our teacher candidates. PDS practices include embedded methods classes that are hosted by PDS Schools, opportunities for teacher candidates to observe and work with local teachers, opportunities for teacher professional development centered on classroom instruction, and opportunities for faculty to work in schools and stay connected to teachers and children. Partner schools within the PDS Network are intentionally located in schools and districts that serve children and communities that have been historically underserved. Funding from this TQP Program will enable us to extend these professional development initiatives to rural schools and districts across the state.

UofSC clinical embedded methods classes and field experiences. A key facet of our program involves clinically embedded methods classes and field experience in high-need elementary and middle schools where university faculty, classroom teachers, and teacher candidates work side-by-side in collaborative, PDS sites to enact and investigate research-based teaching approaches. The embedded methods courses are held in local PDS schools and focus on practice-based experiences within authentic classroom settings, curriculum enactment using research-based approaches, opportunities to contextualize instructional theories, and the intentional modeling of ambitious teaching practices (Lampert, Franke, Kazemi, Ghousseini, Turrou, Beasley, Cunard, & Crowe, 2013). Embedded courses are multi-layered in that they provide opportunities for T[3] Fellows, mentor-classroom teachers, and university faculty to collaboratively examine student work, design and enact responsive instruction, and reflect on teaching in action (Cantrell et al., 2003; Gardiner & Robinson, 2009; NGSS, 2013; NRC, 2012; Thompson & Emmer, 2019; Wilkins et al., 2009).

Theoretical foundation for the T[3] residency program. The T[3] Residency Program is based on Bandura's (1986) social cognitive theory of learning and addresses all four sources of self-efficacy: enactive mastery, vicarious experiences, verbal persuasion, physiological/affective states. Our approaches reflect the belief that, to effectively use specific instructional strategies, such as inquiry, teachers must have both confidence in the strategies and self-efficacy regarding their abilities to implement them. In addition, teachers must adhere to beliefs that are consistent with inquiry practices, develop inquiry-based teaching skills, and have time to practice implementing skills with students in supportive environments (Blanchard, Southerland, & Granger, 2009; Singer, Lotter, Gates, et al., 2011; Luft, 2001). Teachers with a high sense of efficacy regarding their abilities to teach create mastery-oriented environments that support

students' intrinsic motivation to learn (Bandura, 1993). Empirical research shows that teachers with high teaching self-efficacy are more willing to try new instructional techniques and to persevere through difficult tasks (Ross & Bruce, 2007; Tschannen-Moren, Hoy, & Hoy, 1998). Ashton (1984) described how teachers with a high sense of self-efficacy have an increased sense of personal accomplishment, hold positive expectations for student achievement, and believe that it is their responsibility to adapt instruction to enhance student learning.

Dimensions of self-efficacy. Many researchers have described the importance of teacher efficacy and developed tools to measure it (e.g., Klassen, Tze, Betts, & Gordon, 2011; Tschannen-Moran, Hoy, & Hoy, 1998). Most researchers agree that efficacy beliefs are both task and context specific (Tschannen-Moran et al., 1998); a teacher's sense of efficacy depends on both the tasks to be performed and the context of that performance. Contextual considerations include school and classroom environments as well as perceived support from colleagues (Tschannen-Moran et al., 1998). Self-efficacy can also be conceptualized along two dimensions (Bandura, 1986): *personal self-efficacy* and *outcome expectancy*. In the case of the inquiry teaching example, personal self-efficacy is the individual teacher's belief that he/she is capable of teaching an inquiry lesson. In contrast, outcome expectancy, is one's belief that instructional delivery or performance will result in a positive outcome. For example, in the case of an inquiry lesson outcome expectancy relates to a teacher's beliefs about the effects of instruction on students' motivation and learning. If teachers have no prior successful experiences learning and/or teaching through inquiry, it is unlikely that they will attempt lessons using inquiry approaches in their classrooms and unlikely that they believe their students will learn through this approach. Therefore, to develop both personal self-efficacy and outcome expectancy, we

believe teachers must have successful experiences as learners and teachers during inquiry lessons that take place in authentic classroom settings (Bandura, 1997).

Sources of Efficacy. Bandura (1997) describes four sources of self-efficacy: enactive mastery experiences, vicarious experiences, verbal persuasion, and physiological/affective states. The T[3] Residency Program is designed with components aimed to address all four sources.

Enactive mastery. Enactive mastery, the most influential source of self-efficacy, involves direct experience with success or failure through performing complex tasks. Perceived task difficulty, effort expended to succeed with the task, and other contextual factors may influence the increase or decrease of an individual's sense of efficacy across experiences (Bandura, 1997).

Vicarious experiences. Vicarious experiences have also been shown to increase teachers' self-efficacy. For example, vicarious experiences might involve observations of a peer successfully enacting an inquiry task (Bandura, 1997). Through observation, teachers may gain skills that invite them to believe they can succeed in a similar task. However, if teachers believe that they lack necessary skills or if skills appear too complex for them to learn, vicarious experiences may also lower a teacher's sense of efficacy.

Verbal persuasion. Verbal persuasion that provide teachers with positive feedback on performance can positively affect their self-efficacy (Bandura, 1997). Verbal persuasion, often in the form of evaluative feedback, is particularly influential when coupled with successful experiences that push teachers to expend more effort. The evaluator's expert status, as viewed by the teacher, may also influence the degree of efficacy change (Labone, 2004).

Physiological and affective states. Teachers' physiological and affective states, including how they handle stress, fatigue and dealing with negative emotions, may influence self-efficacy

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(Bandura, 1997). Learning environments minimizing stress while keeping teachers emotionally positive and actively engaged are more likely to increase self-efficacy (Labone, 2004).

Embedded methods course supporting research. There are wide gaps between the teaching practices *learned* in teacher education programs and teaching practices *enacted* in typical K-12 classrooms (Bullough et al., 1999; Zeichner, 2010). Research on preservice teachers' methods courses argues for including interventions with documented potential to positively impact future teaching practices (e.g., Cantrell et al., 2003; Watters & Ginns, 2000), namely, interventions that enhance teachers' self-efficacy, highlighting teachers' beliefs in their abilities to perform instructional tasks (Bandura, 1986). Self-efficacy is a powerful predictor of performance (Palmer, 2006). In science and mathematics education, researchers have identified several methods course components that positively impact teacher candidates' teaching self-efficacy, including (a) extensive use of hands-on activities (Watters & Ginn, 2000); (b) instruction about pedagogical techniques such as the learning cycle (Settlage, 2000); and (c) exposure to reform-based practices during teacher preparation (McDevitt, Gardner, Shaklee, Bertholf, & Troyer, 1999). However, researchers realize that opportunities to observe and practice inquiry approaches are integral to developing effective science and mathematics educators (Asay & Orgill, 2010; Rees, Pardo, & Parker, 2013), however few preservice teachers have sufficient opportunities to experience such teaching (Volkmann, Abell, & Zgagacz, 2005).

One promising intervention, *rehearsal,* is currently being incorporated in science and mathematics methods courses to provide additional practice-based opportunities for teacher candidates (Benedict-Chambers, 2016; Lampert et al., 2013; Windschitl et al., 2012). Through rehearsal, novice teachers enact specific instructional practices while the instructor and classmates role-play student learners. This rehearsal serves as teaching practice occurring before

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novice teachers are required to enact similar instructional strategies in their internship classrooms (Lampert et al., 2013). While these approaches show promise, they fall short of the vision of science and mathematics teacher preparation presented in education reform literature. That vision emphasizes learning to teach in authentic classroom settings with students, focusing on student work, and crafting responsive instruction using supportive curriculum materials (Luft, DuBois, Nixon, & Campbell, 2015; NGSS, 2013; National Research Council [NRC], 2012). Such approaches have been linked to preservice science teachers' use of newly learned pedagogies after they move into "real" classroom environments (Luft et al., 2015).

Teachers generally attribute characteristics of their instructional practice to their initial teacher preparation programs (Avraamidou, 2013; Avraamidou & Zembal-Saul, 2005, 2010). Further, reform-based elementary teacher preparation appears to enhance the likelihood of beginning elementary teachers enacting reform-based practices (McDevitt et al., 1999). However, teachers often struggle to maintain current beliefs about inquiry teaching when they enter their own classrooms, and those beliefs diminish when they encounter unsupportive teaching conditions during induction (Britton, McCarthy, Ringstaff, & Allen, 2012). While new teachers often implement the types of instruction envisioned in guiding education documents (Marbach-Ad & McGinnis, 2008), adequate support enhances the likelihood that progressive and inquiry-based instructional practices will be maintained (Luft, 2009). Collaboration with colleagues appears to be a key form of support to enhance beginning teachers' professional orientation toward teaching (e.g., Luft et al., 2015). Related findings emphasize collaborations that address beginning science and mathematics teachers' most pressing need, learning to teach utilizing reform-based approaches that focus on student learning (Luft et al., 2015; NGSS, 2013; NRC, 2012). Inquiry teaching approaches center on student thinking and reasoning as preservice

teachers and their mentors analyze student artifacts and use this information to design instruction that requires students to explain their thinking (Luft et al., 2015). This vision of teacher development reflects what we know about how new teachers are influenced by curricular materials, guiding documents, reflecting on teaching practices, and their work with students.

A noteworthy review of research (Luft et al., 2015) included a synthesis of findings related to beginning teacher professional growth. Highlighted, was a longitudinal study of an Australian primary teacher whose content and pedagogical knowledge was enhanced by interactions with cutting-edge instructional materials (Mulholland & Wallace, 2005). The review (Luft et al., 2015) further emphasized how teaching coupled with exposure to compelling instructional materials can contribute to growth in pedagogical content knowledge of beginning teachers. The study authors further advocated that co-teaching alongside a more experienced mentor leads to more positive outcomes for beginning elementary science teachers. Collectively, these research findings highlight that an effective sequence for teacher development would include powerful models of inquiry teaching during teacher preparation coupled with similar models during induction (Luft et al., 2015; Wang, Odell, 2002; Schwille, 2008). This approach enhances alignment between teaching practices learned in teacher education programs and teaching practices enacted in schools (Britton et al., 2012; Bullough et al., 1999; Zeichner, 2010) while building a positive environment for learning to teach (Anderson, Dragsted, Evans & Sorensen, 2004). Such approaches also create settings were co-teaching with experienced others can become a normal component of teacher development (Koch & Appleton, 2007). Even more significantly though, these experiences can occur in authentic classroom settings with students, can attend to student work, and can model responsive instruction utilizing supportive curriculum materials (Luft et al., 2015; NGSS, 2013; NRC, 2012).

Timeline and Key Features of the University of South Carolina - Transition to Teaching

Key features and the timeline of T^3 are presented and discussed below.

T^3 Fellow Recruitment. Designated T^3 and partner LEA personnel will collaboratively lead project recruitment efforts. Drawing our PDS network, partner school districts, and other educational alliances (including South Carolina's Center for Educator Recruitment and Retention's Rural Recruitment Initiative), we will target recruitment within rural and racially diverse communities. Initial recruitment efforts will focus on currently non-certified positions in partner school district including paraprofessionals and other personnel who have a four-year college degree, but not teacher certification. Key activities follow:

- A T^3 Recruitment Director will be hired and supported through grant funds to establish recruitment efforts through the grant duration and will identify and collaborate with partners in each LEA's Human Resources Department to collaborate on future recruitment and retention.

- Create advertisements targeting rural communities to be broadcast via local media, social media (dedicated website, Facebook page, Twitter, etc.), and displayed in libraries, community centers, places of worship, and school district offices. Materials will direct prospective students to our website and regional "So you want to be a teacher" events to be offered at local libraries and schools.

- Offer sessions at regional career fairs and recruitment events hosted by universities across the state (including Historically Black Colleges and Universities), employment centers, community centers, etc. We will approach state and local organizations that serve African American, immigrant, and Native American communities and request they share information with potential candidates.

- Local and state news organizations (including community newspapers) will be contacted and provided with a press release describing the program and inviting prospective students to contact us and/or attend regional events.

- The Summer Institutes will also serve as a recruitment tool. Local media will be contacted and invited to share success stories and information about the Summer Institutes and how they are connected to the larger project and local communities.

Four Semester Course Schedule for T³. The T³ Program entails a course sequence which provides T³ Fellows with resources to meet three critical benchmarks: requirements for SC Program of Alternative Certification for Educators (PACE); SC credential advancement (eighteen-hours of graduate coursework), and the completion of a thirty-hour M.Ed. in Teaching. Thirty graduate level credits will be granted to students who complete the entire program. This is in addition to participating in the three-year Carolina TIP program and the opportunity to continue on towards an Ed.D. or Ph.D. in education at UofSC.

Elementary and Middle Level Courses. We will adapt courses offered in the UofSC's M.Ed. in Teaching for the T³ project. The M.Ed. degree program provides flexibility in terms of course delivery (on-line and face-to-face) and content area emphasis. The M.Ed. degree program includes five core courses, four specialization courses, plus one additional course as approved by advisor. The proposed project plan involves revising/creating five courses (specialization and additional courses) for the elementary cohorts and revising/creating different versions of the same five courses for middle level cohorts so that coursework is tailored to the specific needs of each cohort. The first two cohorts of T³ Fellows (one elementary and one middle level) will begin coursework in the summer of 2020. During the summer of 2020, initial T³ Fellow cohorts

(one elementary and one middle level) will take three five-week courses, described after Table 3, which provides a detailed timeline of the activities for the T^3 Program.

Table 3:

T³-Timeline

Year 1 (2019-20)	Year 2 (2020-21)	Year 3 (2021-22)	Year 4 (2022-23)	Year 5 (2023-24)
Fall ·Course development Responsibility: Elementary & Middle Level Faculty ·**Recruit and identify key personnel** Responsibility: Elementary and Middle Level Residency Liaison; Recruitment Director; LEA representatives ·**Plan professional development (PD)** Responsibility: Elementary and Middle Level Faculty · **Create recruitment materials** Responsibility: Project Manager; Recruitment Director; Residency Liaisons **Spring** · **Facilitate school-based mentor and university supervisor PD** Responsibility: Elementary and Middle Level Faculty) · **Clinical site development** Responsibility: Project Manager; Residency Liaisons; LEA representatives ·**Recruitment** Responsibility: Project Manager; Residency Liaisons; Recruitment Director; LEA representatives · **Prepare for Summer Institute** Responsibility: Project Manager; Residency Liaisons; Faculty	**Summer** ·Cohort 1 Summer Institute Responsibility: Project Manager; Residency Liaisons; Elementary & Middle Level Faculty · **Start coursework** · **Mentor PD** Responsibility: Elementary & Middle Level Faculty **Fall** ·**Cohort 1 Residency begins** · Coursework Responsibility: Elementary & Middle Level Faculty · **Whole group events** Responsibility: Elementary and Middle Level Residency Liaisons · **Ongoing Mentor PD** Responsibility: Elementary & Middle Level Faculty **Spring** · Facilitate school based mentor and supervisor PD Responsibility: Elementary & Middle Level Faculty · Clinical site development Responsibility: Project Manager; Residency Liaisons; LEA representatives ·Recruitment Responsibility: Project Manager; Residency Liaisons; Recruitment Director; LEA representatives · Prepare for Summer Institute Responsibility: Project Manager; Residency Liaisons; Faculty	**Summer** ·Cohort 1 Showcase Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty · **Cohort 2 Summer Institute** Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty · **Mentor PD** Responsibility: Elementary & Middle Level Faculty **Fall** ·**Cohort 1 Induction begins** ·**Cohort 2 Residency begins** ·Coursework Responsibility: Elementary & Middle Level Faculty · Whole group events Responsibility: Elementary and Middle Level Residency Liaisons · **Ongoing Mentor PD** Responsibility: Elementary & Middle Level Faculty **Spring** · **Facilitate school based mentor and supervisor PD** Responsibility: Elementary & Middle Level Faculty · **Clinical site development** Responsibility: Project Manager; Residency Liaisons; LEA representatives ·**Recruitment Responsibility:** Project Manager; Residency Liaison; Recruitment Director; LEA representatives · **Prepare for Summer Institute** Responsibility: Project Manager; Residency Liaisons; Faculty	**Summer** ·Cohort 2 Showcase Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty · **Cohort 3 Summer Institute** Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty · **Mentor PD** Responsibility: Elementary & Middle Level Faculty **Fall** ·**Cohort 1 Induction continues** ·**Cohort 2 Induction begins** ·**Cohort 3 Residency begins** ·Coursework Responsibility: Elementary & Middle Level Faculty · Whole group events Responsibility: Elementary and Middle Level Residency Liaisons · **Ongoing Mentor PD** Responsibility: Elementary & Middle Level Faculty **Spring** · **Facilitate school based mentor and supervisor PD** Responsibility: Elementary & Middle Level Faculty · **Clinical site development** Responsibility: Project Manager; Residency Liaisons; LEA representatives ·**Recruitment Responsibility:** Project Manager; Residency Liaison; Recruitment Director; LEA representatives · **Prepare for Summer Institute** Responsibility: Project Manager; Residency Liaisons; Faculty	**Summer** ·Cohort 3 Showcase Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty ·**Cohort 4 Summer Institute** Responsibility: Project Manager; Residency Liaisons; Elementary and Middle Level Faculty · **Mentor PD** Responsibility: Elementary & Middle Level Faculty **Fall** ·**Cohorts 1 and 2 Induction continues** ·**Cohort 3 Induction begins** ·**Cohort 4 Residency begins** ·Coursework Responsibility: Elementary & Middle Level Faculty · Whole group events Responsibility: Elementary and Middle Level Residency Liaisons · **Ongoing Mentor PD** Responsibility: Elementary & Middle Level Faculty **Spring** · **Facilitate school based mentor and supervisor PD** Responsibility: Elementary & Middle Level Faculty · **Clinical site development** Responsibility: Project Manager; Residency Liaisons; LEA representatives ·**Recruitment Responsibility:** Project Manager; Residency Liaison; Recruitment Director; LEA representatives · **Prepare for Summer Institute** Responsibility: Project Manager; Residency Liaisons; Faculty

Summer I – Three 5-week courses

• **Developing as a Professional Educator:** The course will introduce T^3 Fellows to concepts and strategies that assist teachers in developing as effective and successful K-12 educators.

• **Inquiry across Curriculum (Specialized):** This course will introduce T^3 Fellows to inquiry teaching approaches. Summer institute workshops will complement the focus on student inquiry and learning. T^3 Fellows will implement what they learn with students in the summer program.

• **Specialized** C**ontent Area Instruction:** These courses will introduce T^3 Fellows to foundational elements of appropriate content area instruction. For example, elementary T^3 Fellows will take a course centered on content appropriate for elementary teachers such as reading instruction (phonemic awareness, phonics, vocabulary, fluency, comprehension, etc.). Similarly, middle level candidates will take a separate course centered on content area instruction appropriate for their degree programs. The role of inquiry in content classrooms will be explored and T^3 Fellows implement what they learn with students attending the summer program.

Fall - Two 8-week courses

• **Diversity and Teaching Environments:** This course focuses on organizing and operating classrooms in diverse school contexts, with particular attention to needs of limited English proficiency and students with disabilities. Topics include student diversity, classroom management, lesson planning, and how to use assessment data to inform classroom instruction.

• **Specialized** C**ontent Area Instruction:** These courses extend T^3 Fellows understanding of elements of appropriate content area instruction with a goal of computer science and digital literacy integration. Like the summer content courses, these courses examine the role of inquiry in content classrooms as T^3 Fellows implement what they learn during embedded methods course experiences in partner LEA classrooms.

Spring – Two 8-week courses:

• **Specialized** C**ontent Area Instruction:** These courses extend T^3 Fellows understanding of elements of appropriate content area instruction via embedded methods course experiences with a goal of computer science and digital literacy integration.

• **Action Research in Teaching:** This course introduces T^3 Fellows to action research through the investigation of a significant question or issue related to teaching in K-12 schools.

Summer II – Three 5-week courses

• **Specialized** C**ontent Area Instruction:** This course serves as a culmination of T^3 Fellows' exploration of content area instruction with a goal of computer science and digital literacy integration. Inquiry and mentorship will be explored as Year 2: T^3 Fellows work with Year 1: T^3 Fellows to implement targeted teaching strategies with summer program students.

• **Ideas and Issues in Teaching:** The course provides an examination of theoretical and philosophical concepts fundamental to understanding learning and teaching.

• **Action Research Capstone Seminar:** This course serves as a culminating experience that includes completion of an action research project and a thorough review of professional growth.

T^3 Summer Institute "An Inquiry-Based and Exploratory Teaching Model"

The T^3 Summer Institute is an initial teaching immersion experience for Year 1: T^3 Fellows and a culminating experience for Year 2: T^3 Fellow. During the two-week institute, T^3 Fellows, university faculty, clinical experience supervisors, and school-based mentor teachers engage in inquiry-based learning experiences focused on STEM, literacy, and computer science. During week two, small groups of T^3 Fellows, with the support of T^3 mentor teachers, T^3 supervisors, and T^3 university faculty, design and implement inquiry-based lessons and targeted

instructional strategies to students recruited from partner LEAs. In addition to providing a context for guided teaching opportunities, the Summer Institute provides the setting for T^3 Fellows to complete assignments connected to their university coursework.

T^3 Summer Institute Inquiry-Based Learning Experiences

T^3 Fellows take three courses during summers I and II (semesters 1 & 4) in which they participate in a research-supported "inquiry-based and exploratory teaching" model that promotes the use of high-quality inquiry-based instructional practices (Lotter, Thompson, Dickenson, Smiley, & Rea, 2017; Lotter, Smiley, Thompson, & Dickenson, 2016). This model addresses learning in science education classrooms and has been adapted for elementary and middle school mathematics, social studies, and language arts classrooms. The professional development model involves a two-week Summer Institute (i.e., seven hours a day for ten consecutive days) that centers on content and pedagogical knowledge while engaging T^3 Fellows with elementary and middle school students, and small-group reflection on teaching.

During Week 1 of the Summer Institute, T^3 Fellows engage in inquiry activities as learners, experiencing learning subject matter in this way firsthand. For instance, a sixth-grade energy unit might be developed around a driving question, such as, "How can I build a house that will keep me cool during South Carolina summers?" As part of this unit, T^3 Fellows build and test coolers using different insulation and conducting materials and record temperature data to determine which materials keep food warm for the longest time. Additional units explore questions related to other computer science disciplines including computer coding, digital literacy, argumentative writing, literature discussions, computational thinking, and software design. Thus, the T^3 Fellows learn content by experiencing the curriculum as learners through engagement in targeted instructional strategies. Following each unit, T^3 Fellows, their mentors,

supervisors, and instructors discuss how activities relate to guiding international, national, and state-level policies and standards (e.g., ISTE Standards for Educators; Next Generation Science Standards; Common Core State Standards; SC College and Career Readiness Standards).

In Week 2 of the Summer Institute T³ Fellows are scaffolded by course instructors, mentors, and supervisors as they observe, prepare, plan, implement, and reflect upon lessons with students recruited from participating LEAs to participate in summer academic enrichment experiences. Student selection will be based on teacher and administrator recommendations with particular attention to students who fail to meet South Carolina's *Read to Succeed* benchmarks. Early in the week, university instructors will model use of targeted instructional strategies during morning sessions with elementary and middle school students. During afternoon sessions when the students are no longer present, T³ Fellows, mentors, supervisors, and university instructors engage in reflective discussions centered on both content and instruction. After observing model lessons for two days, teams of three T³ Fellows plan lessons that include targeted instructional strategies (Lampert, Franke, Kazemi, Ghousseini, Turrou, Beasley, Cunard, & Crowe, 2013) adapted from curriculum introduced and explored during earlier content and pedagogy sessions. All sessions taught by T³ Fellows will be observed by at least one member of the T³ project team (course instructor, mentor, or supervisor) and swivel cameras will routinely be used to video-record these lessons. This T³ project team member then meets with T³ Fellows to collaboratively reflect on lesson content and instruction effectiveness. During reflective discussions, T³ Fellows explore observed strengths, missed opportunities during teaching episodes, and brainstorm possible revisions and adjustments to inform future ambitious teaching sessions.

T³ Summer Institute Exploratory Learning Experiences

T^3 Summer Institute Exploratory Learning Experiences involve sessions for T Fellows, T^3 Mentors, and T^3 Supervisors to engage in both collectively and separately. These *Exploratory Learning* Experiences involve faculty specialists from the UofSC College of Arts and Sciences (biology and library sciences) and Engineering and Computing (engineering and computing). These professionals provide professional workshops, teach courses, support inquiry initiatives, and coach T^3 Fellows, T^3 Mentors, and T^3 Supervisors. Summer Institute Exploratory Learning Experiences have been designed to address **Competitive Preference Priority 1**, by promoting science, technology, engineering, and math (STEM) education, with an emphasis on computer science and digital literacy (See Appendix I for Letters of Support). Planned Exploratory Learning Experiences include the following:

1. **The UofSC College of Engineering and Computing** offers a full range of exploratory learning experiences that will be integrated into Summer Institutes I and II for T^3 Fellows and T^3 Mentors: *Introduction to Computer Science, Think like a Computer, Block-Based Programming, Robotics,* and *Web Design.* Recent legislation now requires training in computer coding for all South Carolina K-12 teachers; thus, we will offer the *Block-Based Programming* module every summer for T^3 Fellows, T^3 Mentors, and T^3 Supervisors.

   The UofSC College of Engineering and Computing also provides access to additional professional development and resources that address computer science with an emphasis on coding, computational thinking, and software design. Together, our partners from the *College of Arts and Sciences* and *College of Engineering and Computing* will collaborate with T^3 faculty to create authentic teaching experiences allowing T^3 Fellow, T^3 Mentors, and T^3 Supervisors to engage in shared learning and teaching focused on computer science. Our T^3 project team includes a representative who took part in the recent development of

computer science and digital literacy standards for K-12 students in South Carolina, and he

will guide this project component.

2. **The Center for Science Education in the UofSC College of Arts and Sciences** will

   provide coursework, activities and workshops to supplement and extend the inquiry

   activities that will occur across the summer institute. The *Center for Science Education*

   houses university faculty from all science disciplines who will serve as consultants and

   resources to support a full range of activities across science content areas (including life

   sciences, physics, geology, human biology, and genetics).

3. **The *South Carolina Center for Children's Books and Literacy*** in the **UofSC College of**

   Information and Communications is the state's designated examination site for new

   children's and young adult books. In addition to making books available to the public, this

   center provides a range of outreach activities. *The South Carolina Center for Children's*

   Books and Literacy will provide access to high quality children's literature, serve as

   consultants in regard to children's and young adult literature, provide T^3 Fellows with

   information about collaborating with local libraries, and provide targeted book donations

   to T^3 Fellows and T^3 Mentors who work in Title I schools.

   In order to support T^3 Fellows as they are learning to teach, it is essential that T^3 Mentors

and T^3 Supervisors bring a strong understanding of both disciplinary content and pedagogy to

their work with residents. Thus, as part of the first semester and four Summer Institutes, T^3

Mentors and T^3 Supervisors will be provided with summer mentoring/coaching workshops. They

will also take part in sessions that support their understanding of the dimensions of STEM,

Computer Science and literacy discussed above as well as critical issues related to use of

formative and diagnostic assessment. We also will address issues that often complicate learning for children from communities that have been historically underserved by schools.

T³ Fall and Spring Embedded Courses and Teaching Experiences

Embedded methods course description. Our model focuses on practice-based experiences in authentic classroom settings and curriculum enactment utilizing reform-based approaches (Cantrell et al., 2003; Gardiner & Robinson, 2009; NGSS, 2013; NRC, 2012; Wilkins et al., 2009). At both the elementary and middle school levels methods courses will be embedded in classrooms in which T³ Fellows work and a portion of each methods course (i.e., Specialized Content Area courses) will involve T³ Fellows teaching students.

During each class meeting T³ Fellows work with an individual or small group of elementary students we refer to as "Small Teachers" because they provide T³ Fellows with valuable lessons about teaching, kid-watching, cultural competence, and building relationships. During each methods class, the instructor or the T³ Mentor Teacher will model a strategy embedded within a content lesson and T³ Fellows are provided with opportunities to observe and then practice the strategy with Small Teachers. Over time T³ Fellows assume more and more ownership over the introduction of new strategies and their implementation in classroom settings. Later in the course sequence the T³ Fellows, under the guidance of T³ Mentors and T³ Supervisors apply what was modeled in one of their own lessons. This sequence allows T³ Fellows to first focus on personal teaching effectiveness with one-three Small Teachers and to be scaffolded into enactment with entire classes of students. T³ Fellows will journal about their experiences, analyze student work, and discuss their experiences and questions at the next class. Routine video footage will be collected and discussed in class.

While teaching learning to teach content is the primary focus of methods classes, instructors share a commitment to diversity and will consistently challenge T[3] Fellows to consider linguistic, cultural, and learning differences that influence student learning. Thus, our embedded courses will consistently attend to how student diversity, in all forms, affects children's school experiences (Compton-Lilly, 2015; Escamilla, Hopewell, Butvilofsky, Sparrow, Soltero-González, Ruiz-Figueroa, & Escamilla, 2014; González, Neff, Amanti, & Moll, 2006). As T[3] Fellows work with students in embedded classroom settings, they will reflect on how students' experiences and culture impact their learning trajectories. These embedded learning experiences will be supplemented with course readings highlighting instructional strategies that address differences (e.g., Formative assessment, differentiated instruction, etc.). See Table 4 for a representative Five-Week Embedded Methods Course sequence in science.

Table 4

Embedded Methods Course Model Overview

Elementary Class Component	Time$_1$	Collaborative$_2$ Methods Course Activity
Formative Assessment of Students • Student engagement in lesson topic via 5E Engagement (Bybee, 2015) and/or Formative Assessment Question (Black & Wiliam, 1998), i.e., "Does my shadow change during the day?"	Week 1	a) Analysis of students' conceptions – trends identified b) Design of responsive instruction that features student data collection, analysis, and explanation c) Formative assessment reading and reflection d) Group reflection
Instructional Enactment • Student activities that Mimic 5E Exploration/Explanation phases (Bybee, 2015), feature the use of Probing/Challenging Questions (Roth, Bintz, et al., 2017), and prompt students to explain their thinking (Luft et al., 2015), i.e., exploring shadows investigations.	Weeks 2/3	a) Preparation for upcoming teaching engagements. b) Analysis of students' conceptions – trends revisited c) Reflection on topics such as evidence of student learning, lesson outcomes, and personal goal setting for future teaching engagements.
Content Application • Activities Mimic 5E Elaboration phase (Bybee, 2015), i.e., creating	Week 4	a) Preparation for upcoming teaching engagements. b) Analysis of students' conceptions –

shadows on an earth model.		trends revisited c) Reflection on topics such as evidence of student learning, lesson outcomes, and personal goal setting for future teaching engagements.
Assessment • Original Formative Assessment Question revisited Black & Wiliam, 1998). • Small group activity, i.e., draw a model to explain shadow observations.	Week 5	a) Analysis of students' conceptions – trends revisited b) Reflection on student learning, personal professional growth

1 - The science methods courses meet once a week for three hours over a 15-week period. All meetings occur in elementary schools and each week approximately one hour is spent interacting with elementary children in the science classes.
2 – Collaboration involves teacher candidates, teacher residents, teachers, and university faculty.

An Intentional Focus on Literacy across the Curriculum

While STEM and computer science are the primary foci, attention is also paid to literacy teaching in elementary and middle school cohorts. Each T[3] cohort will learn about essential components of literacy instruction critical to reading across levels of development: phonemic awareness, phonics, vocabulary development, reading fluency, and reading comprehension (National Reading Panel Report, 2000). We anticipate many students will be reading below grade level and will struggle with dimensions of reading generally taught in primary classrooms. Thus, T[3] Fellows must bring a deep, working knowledge of literacy that can inform instruction for students. Towards this end, T[3] Fellows will work with students in their embedded literacy methods course classroom settings who struggle with reading and writing. These experiences, alongside modeled lessons and support from T[3] members will provide T[3] Fellows important insights to challenges faced by developing readers.

While we recognize the critical importance of phonemic awareness, phonics, and vocabulary development for all readers (Ebbers & Denton, 2008; Ehri, 2004; Roberts, Torgesen, Boardman, & Scammacca, 2008), we also recognize many readers in grades 2-8 face particular

difficulties with reading fluency and comprehension (Duke & Pearson, 2009; Edmonds, Vaughn, Wexler, Reutebuch, Cable, Tackett, & Schnakenberg, 2009; Ivey & Baker, 2004). Effectiveness of instruction targeting fluency as comprehension is confirmed by the most successful programs reviewed by What Works Clearinghouse for students in grades 4 and above (e.g., *Instructional Conversations and Literature Logs, Read 180, SpellRead*), reporting either positive or potentially positive effects on reading fluency and comprehension. T^3 Fellows will be working in content area classrooms (e.g., mathematics, science, social studies, English/Language Arts) *or* will be teaching these content areas in elementary classrooms; thus, it is essential that all T^3 Fellows, Mentor Teachers, and Supervisors gain a deep understanding of how to support students in negotiating discipline specific texts.

Resident Selection

T^3 Fellows selection criteria will be established collaboratively with partnering LEAs. Criteria will align with LEA hiring objectives and instructional initiatives and will consider applicants who reflect local LEA communities and underrepresented populations in the South Carolina teaching force. Partnering LEAs are committed to hiring qualified T^3 Fellows upon graduation, and the university is committed to supporting new teachers through our Carolina TIP program for three years.

In total, this project will serve 114 T^3 Fellows (57 elementary, 57 middle level), 114 T^3 Mentors (57 elementary, 57 middle level), and 30 T^3 Supervisors (15 elementary, 15 middle level). Eligible T^3 Fellow applicants shall be recent graduates of a four-year institution of higher education or a mid-career professional from outside the field of education. These applicants will possess strong content knowledge and/or record of professional accomplishment. There will be a competitive application process to determine their knowledge, skills, and dispositions. The

application process will seek to identify applicants' content knowledge or record of accomplishment, verbal and written communication skills, and dispositions towards effective teaching. The application process will include written and verbal components, and a panel interview will occur with representatives from the university, partnering LEAs, and partner schools. Once selected, T^3 Fellows will be grouped into elementary and middle level cohorts to facilitate professional learning and collaboration, see Table 5.

Table 5

T^3 Cohort Breakdown

	Elem. T^3 Fellows	Elem. T^3 Mentors	Elem. T^3 Supervisors	Middle Level T^3 Fellows	Middle Level T^3 Mentors	Middle Level T^3 Supervisors
Year 1 2019-2020	Planning for Summer Implementation of T^3 cohort Course preparation & approval					
Year 2 2020-2021	12	12	3	12	12	3
Year 3 2021-2122	12	12	3	12	12	3
Year 4 2022-23	15	15	4	15	15	4
Year 5 2023-24	18	18	5	18	18	5

Stipends, Applications, Agreements, and Repayments

T^3 Fellows will be provided a one-year living stipend of $15,000.00 during their residency year. To be eligible for this stipend, each Fellow will submit an application to the partner LEA. This application will be individualized to meet each LEA's specific needs, but it will include an agreement to serve as a full-time teacher for a total of not less than three academic years immediately after successfully completing the T^3 program. Additionally, graduated T^3 Fellows must meet the applicable state certification requirements, including any requirements for certification obtained through alternative routes to certification. Furthermore, the university and partnering LEAs will create protocols for repayment for T^3 Fellows who do

not complete their application obligations. These protocols will include reasonable provisions for

prorate repayment and will take into consideration a Fellow's inability to complete their

obligations due to grounds of health, incapacitation, inability to secure employment in a school

served by the eligible partnership, being called to active duty in the Armed Forces of the United

States, or other extraordinary circumstances. The T^3 program shall use any repaid funds to carry

out additional activities that are consistent with the purposes of the program.

T^3 Mentor/Supervisor Capacity Development and Professional Development Plan

Supervisors and mentors of novice teachers generally learn their practice is isolation

(Langdon & Ward, 2015). There are many pitfalls associated with this condition. In response the

research community argues for educative mentoring, which is briefly defined as mentoring that

emphasizes novice teachers learn their practice with the assistance of a mentor teacher

(Bradbury, 2010). The T^3 program recognizes the importance of growth through teaching and the

significance of high quality school-based mentoring. As a result, we expand upon educative

mentoring to include additional layers and forms of support for novice teachers.

The role of a mentor within a teacher residency is multi-faceted and has great influence in

determining the quality of teacher candidate learning (Zeichner, 2002). Ideally, every teacher

candidate would experience educative mentoring in which the intern, mentor, and supervisor

collaboratively engage in professional growth focused on co-teaching, co-planning, reflection,

coaching, and feedback. Such interactions engage stakeholders in the intellectual work of

teaching and instill lifelong habits that foster student and teacher learning (Feiman-Nemser,

2012; Schwille, 2008). Unfortunately, mentoring received during teacher candidates' practicum

experiences often lacks coherence and may be inconsistent across placements (Darling-

Hammond et al., 2005). Many interns do not develop educative mentoring relationships with

their mentors, and dynamics become complicated and challenging (Borko & Mayfield, 1995; Bullough & Draper, 2004; Valencia et al., 2009). These challenges create tensions that stem from a lack of coherent content and pedagogical knowledge, inconsistent and superficial feedback, misaligned goals and expectations, and interns' inability to apply knowledge and pedagogy in mentor classrooms (Bradbury & Koballa, 2008; Valencia et al., 2009).

Quality educative mentoring requires developing mentors' knowledge, skills, and dispositions to support effective mentoring (Schwille, 2008). Thus, teacher preparation programs should design sustained professional learning opportunities that enhance coherence and mentors' practices. Professional development experiences should not only prepare mentors to support teacher candidates in their residency year, but also in their induction period as beginning teachers. Towards these ends the T^3 program includes professional development (PD) experiences for T^3 Mentors and Supervisors with three overarching foci:

1. Mentoring and coaching;

2. Science, Technology, Engineering, Mathematics (STEM) with an emphasis on computer science and digital literacy, literacy content and pedagogical content knowledge; and

3. Induction teacher support.

These professional learning experiences are designed using Garet and colleagues' (2001) tenets of high-quality professional development (i.e., coherence, sustained duration, active learning, collective participation, and focused on content) and allow for differentiated implementation based on teacher candidate traits.

Initial T^3 activities will develop T^3 Mentors' and T^3 supervisors' knowledge and skills in the practice of mentoring. These experiences will focus on the relational, developmental, and contextual aspects of mentoring (Ambrosetti, Knight, and Dekker, 2014) to prepare T^3 Mentors

and T^3 Supervisors to enact mentoring practices that are effective within an educative residency environment. One aspect of this will attend specifically to the content and pedagogy of supervision and mentoring. The T^3 mentoring model will also provide training and support centered on the implementation of co-teaching models (Friend & Cook, 2000) to support all stakeholders' learning. Additionally, mentors and supervisors will participate in sustained professional development focused on the Carolina Coaching Model. This coaching model is based on the tenets of instructional and cognitive coaching (Costa, 2016; Knight, 2007) and provides consistency across supervision.

The second T^3 Mentor/Supervisor focus is aimed at increasing T^3 Mentors' and T^3 Supervisors' content and pedagogical content knowledge by engaging these stakeholders in Exploratory Learning Experiences alongside T^3 Residents as previously described. Through collaborative learning and enactment of authentic teaching experiences, T^3 Fellows, T^3 Mentors, and T^3 Supervisors are engaged in shared learning which enhances programmatic coherence and lays the foundation for the development of necessary professional relationships (Curcio, 2017).

The final professional development focus will attend to induction teacher support. These experiences will be designed in collaboration with the Carolina TIP program (Hodges & Roy, 2017) and will have a two-pronged approach. First, the initiative will focus on the cultivation of induction mentors' coaching practices. Second, the initiative will attend to areas such as classroom environment, instructional strategies, and navigating the context of teaching.

Mentor Teacher Selection and Roles

T^3 Fellows' residency experiences will occur alongside trained and experienced mentor teachers at our partner schools. Mentors will be selected based on criteria developed collaboratively with partner LEAs and schools. These criteria will take into account eligible

mentor teachers' knowledge of content, pedagogy, and assessment; alignment of mentor teachers' practices to T^3 coursework; mentor teachers' evaluations using the SCTS 4.0 rubric and Student Learning Objectives (SLOs) to establish teacher effectiveness. Additionally, criteria will attend to dispositions of effective mentors including but not limited to open collaboration, engaged reflection, maintaining an inquiry stance, and effective communication skills.

T^3 Mentors will coach T^3 Fellows both inside and outside the action of teaching throughout the residency experience. On-going coaching and mentoring will occur through the implementation of co-teaching models (Friend & Cook, 2000), and T^3 Mentors will work collaboratively with supervisors and faculty to support T^3 Fellows in the application of knowledge gained in coursework. In addition to direct mentoring and supervision in the classroom, T^3 Mentors will serve as teacher leaders within the school community and engage in various professional learning experiences. To support T^3 Mentor development, mentors may be relieved from teaching duties for professional development.

Teacher Induction

The teacher induction period, defined as years 1–3 in the classroom, represents a crucial time for development for teachers. Research on new teacher effectiveness indicates that beginning teachers' student achievement scores fall below mean values during their first years of teaching before rising in years 3 –5 (Henry et al., 2013). Furthermore, a recent report on teacher retention over a 5-year period found that 30% of beginning teachers leave their current teaching positions within the first 5 years (Gray & Taie, 2015). As such, there is a continual cycle of beginning, lower-performing teachers entering classrooms, particularly in hard to staff rural and high poverty regions. To address the aforementioned issues, many districts and/or schools have developed teacher induction models with the following three goals:

1. Improving new teacher performance;

2. Improving student achievement; and

3. Improving retention of novice teachers.

To date, the responsibility of designing and implementing new teacher induction programs in South Carolina has resided with local school districts. These induction programs operate, in large part, independent of the university-based teacher education programs that prepare roughly 90% of the nation's teachers. At the University of South Carolina, many of the Professional Education Unit's initial licensure programs foreground clinical and embedded practice in the design of coursework, practica, and student teaching experiences. For instance, UofSC certification programs offer site-based courses, which meet at local schools, which involve candidates in observations and interactions with P–12 students under the careful guidance of university faculty and classroom teachers (cf., Hodges & Mills, 2014). These sorts of programmatic designs represent the vision set forth in NCATE's (2010) Blue Ribbon Report:

> Preparation programs, school districts, teachers and their representatives and state and federal policymakers need to accept that their common goal of preparing effective teachers for improved student achievement cannot be achieved without each other's full participation. They must form new strategic partnerships to share the responsibility of preparing teachers in radically different ways (National Council for Accreditation of Teacher Education, 2010).

While the report's focus was on the preparation of preservice teachers, the message is clear: effective teacher development, both at preservice and inservice levels, is a responsibility shared by education program providers and their P-12 partners. Through PDS Network these shared goals are increasingly being realized at UofSC. Through advanced licensure programs

and/or contract courses with school districts, additional model partnerships have been developed. However, a concerted, centralized effort similar to initial teacher preparation, yet focused on the support of induction teachers has not yet materialized.

Carolina Teacher Induction Program (Carolina TIP)

The Carolina Teacher Induction Program (Carolina TIP) at the UofSC is a model of support for induction teachers designed as a collaboration between South Carolina districts/schools and initial teacher preparation programs at the University of South Carolina. The TIP model is grounded in the belief that teacher preparation programs and school districts have a shared responsibility in not only the development of preservice teachers, but in the continued support of novice teachers through their first three years in the classroom as teachers of record.

South Carolina school districts and the College of Education at University of South Carolina share the common goal of developing a college and career ready teaching force. As such, the need for cooperative development of practitioners capable of facilitating P-12 student learning, programmatic assessment and reflection on the design of preservice education, and the implementation of effective induction experiences serve as the collective impetus behind the Carolina TIP.

Carolina TIP is designed to serve as a bridge between the university and the classroom; providing support in clinical application of pedagogical theory to the novice teacher in partnership with districts/schools to positively impact student learning as well as teacher efficacy and retention. UofSC faculty and Carolina TIP staff, with expertise in instructional support and the licensure areas, will partner with T^3 districts/schools to provide additional layers of induction support for the first three years of T^3 Fellows' careers.

<center>**T³ Management Plan**</center>

Three governance groups will manage and guide the T³ initiative to ensure efficiency of operation and shared decision-making.

Leadership Team – This group will meet weekly and will focus on day-to-day T³ operations and implementation matters. It will consist of the Project PIs and other "as-needed" T³ personnel.

Executive Committee – This group will meet monthly and will consist of leaders from each partner institution, the project evaluation team, key stakeholders, and other "as-needed" T³ personnel. This group will provide leadership in areas where shared decision-making is needed. This includes matters such as planning T³ activities, issues associated with T³ implementation, and general T³ project-related problem solving. This group will also be an important T³ component that ensures alignment across partners is high and communication is consistent.

Advisory Board – This group will meet annually and will consist of key leaders from partner institutions and other stakeholders who can provide advice and guidance to the Executive Committee. Key leaders include the superintendent of each partner LEA (or his/her representative) and the UofSC College of Education Dean. Key stakeholders include representatives from the South Carolina Center for Educator Recruitment, Retention, and Advancement and the State Department of Education. The Advisory Board will be given summary data provided by the evaluation team, learn about project goals and current progress towards meeting T³ goals, and provide recommendations to improve the T³ project.

<center>**T³ Leadership Team**</center>

• Dr. George J. Roy, an Associate Professor at University of South Carolina, brings extensive experience in mathematics education. Dr. Roy has committed his work and research to the development of K-12 mathematics teachers. As Co-PI, Dr. Roy will be responsible for general

project oversite to ensure the project will be appropriately directed, intellectually and logistically, and ensure the submission of all required reports as project PI.

• Dr. Stephen Thompson, a Professor at University of South Carolina, will coordinate T^3 STEM initiatives including summer institute STEM and Computer Science events, oversee STEM courses, and provide STEM and inquiry training to T^3 Mentors and T^3 Supervisors. Dr. Thompson will support the submission of all required project reports.

• Dr. Rachelle Curcio, a Clinical Assistant Professor for Elementary Education, has focused her research and teaching on teacher learning and educational coaching. As Co-PI, she is responsible for providing ongoing, meaningful professional development and technical assistance in all participant settings. In support of T^3 she will lead the mentoring and supervision to ensure the project will be appropriately directed as well as assist in the submission of all required reports. She will serve as the organizer and coach for online learning experiences and work directly with elementary T^3 Mentors and T^3 Supervisors to ensure support for T^3 Fellows and induction teachers.

• Dr. Melissa Baker, a Clinical Assistant Professor for Middle Level Education, will serve as the organizer and coach for online learning experiences and work directly with middle level T^3 Mentors and T^3 Supervisors to ensure support for T^3 Fellows and induction teachers. As Co-PI, Dr. Baker will also serve as primary liaison to the Carolina TIP program. She will also lead the recruitment and retention initiatives.

T^3 Executive Committee

In addition to those T^3 personnel identified above, membership will also include:

- Dr. Catherine Compton-Lilly, the John C. Hungerpiller Professor at University of South Carolina, who will coordinate T^3 literacy initiatives including summer institute literacy events, oversee literacy courses, and provide literacy training to T^3 Mentors and T^3 Supervisors.

- Dr. Cindy Van Buren, Assistant Dean for Accreditation and Professional Partnerships at the University of South Carolina, will coordinate partnership school alliances and activities. Dr. Van Buren has extensive experiences with educational initiatives in South Carolina. She has worked in schools as both a teacher and administrator, taught at SC colleges, and worked for the State Education department. As the Partner School Director at UofSC, she will serve as the primary coordinator for affiliation and collaboration with school districts.

- Dr. Tammie Dickenson is the Director of the UofSC Research, Evaluation, and Measurement Center (REM Center). Her research interests include multilevel modeling, quasi-experimental designs, and item response theory. Her work includes development of project objectives and associated measures, instrument selection and development, and data collection and analysis. Dr. Dickenson will serve as the lead statistician for the project.

- Dr. Kristin Harbour, Assistant Professor at University of South Carolina, will provide training to T^3 Mentors and T^3 Supervisors regarding students with disabilities.

- LEA Superintendent Representative – Designated representative from each superintendent will attend each meeting, act on behalf of the LEA, and will work outside the Executive Committee (with T^3 Project Director) to enact project activities.

- LEA Recruitment Representative - Designated representative from each LEA will attend as needed and will work outside the Executive Committee (with T^3 Recruitment Director) to enact recruitment activities.

• LEA Human Resources Representative Designated representative from each LEA will attend

as needed and will work outside the Executive Committee (with T^3 Project Director) to enact

related activities.

T^3 Advisory Board

Dr. Jon Pedersen – Dean of the USofC College of Education.

Dr. Lana Williams - Superintendent of the Orangeburg 4 School District

Dr. Franklin Foster, Superintendent of the Colleton County School District

Representative – Director of the South Carolina Center for Recruitment, Retention, and

Advancement

Project Evaluation

The project evaluation, conducted by Research, Evaluation, and Measurement (REM)

Center at the University of South Carolina, is based on four measurable goals related to the

development and implementation of the T^3 teacher residency program and partnership with

UofSC Teacher Induction Program (i.e., Carolina TIP). The evaluation will include

implementation and impact components to allow for continuous quality improvement throughout

each stage of program implementation focused on meeting goals and objectives. Each goal and

its related objectives, outcomes, and evaluation strategies are listed below.

The implementation evaluation uses a series of evaluator-developed surveys, focus

groups, and observation protocols to understand successes and areas for improvement in project

implementation. These instruments will be developed with input from project leaders to address

content validity. Internal consistency reliability coefficient will be calculated for survey data and

is expected to be at least .80. The impact evaluation uses well-researched and validated

instruments to collect and analyze data. In addition, the implementation and impact components

will consider aspects of the broader system (state/school district policy and practice) that may be impacting overall teacher recruitment, retention, and effectives and how the implementation and impacts of this project are operating within and affecting the system.

The evaluation is informed by an improvement science approach including the development of a networked community (Executive Committee), continuing review of data and disciplined inquiry (regular data-based meetings), and understanding the system that facilitates current results (Bryk, Gomez, Grunow, & LeMahieu, 2017). In addition, evaluators will focus on the "micro details" (Bryk, Gomes, Grunow, & LeMahieu, 2017, p. 8) that facilitate or impede progress toward goals. To engage the network improvement community, the REM Center evaluators will take part in monthly meetings with project leadership and representatives from each sector (Executive Committee), annual meetings with the Advisory Board, and as-needed meetings with the Leadership Team using state and school-district data related to the projected outcomes. The REM Center will prepare summaries of results from data collection to present to project personnel as they become available. Written evaluation reports on all data collected during the year will be prepared annually.

Goals and Objectives

Measurable Goal 1: Increase recruitment of teachers who come from diverse backgrounds through an innovative residency program that is accessible and affordable	
Objectives	**Outcomes**
1. Develop and implement a residency program for career changers and paraprofessionals with strong academic and/or professional backgrounds to lead to initial certification and master's degree	
2. Work with partner districts to identify prospective candidates who are likely to be effective teachers and come from diverse backgrounds	Applications to T^3 program will increase by at least 5% in Years 3 and beyond and include increasing percentages of members of underrepresented groups
3. Collect and analyze data at each partner district annually related to teacher	Increase percentage of candidates progressing toward meeting State certification and license

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demographics including gender, race and ethnicity, years of experience, preparation route, education and certifications to understand trends and promote diversity	requirements in high-needs partner districts who are members of underrepresented groups, eligible to teach in high-needs academic subject areas, and/or eligible to teach in high need program areas within elementary and secondary schools
4. Provide a livable wage to allow T^3 Fellows to be full-time participants in the program during the residency year	

Evaluation Strategies

The REM Center will work with the South Carolina Center of Educator Recruitment, Retention, and Advancement (CERRA) to better understand state-level trends as well as trends in the partner districts. CERRA produces a teacher supply and demand report each January using data from the 82 districts across South Carolina. Each year, REM Center evaluators will gather specific data on the number of certified teaching positions, number of new teachers hired, number of teachers retained, vacancies at the beginning of each academic year, and certification areas with the highest vacancy rates at the state-level and within the partner districts. REM Center evaluators will also gather data about the preparation paths of all new teachers in each partner districts to explore trends and inform program recruitment efforts.

To understand the impact of T^3 on teacher recruitment, REM Center evaluators will gather demographic data on all applicants, admitted candidates, and T^3 Fellows including gender, race and ethnicity, work experience, undergraduate degree program, and certification area of interest to examine efforts to publicize the program, encourage applicants from a variety of avenues, and explore demographics of those who matriculate into the program. To more effectively recruit and inform the initiative, a survey of eligible instructional employees (e.g., teacher assistants, paraprofessionals) within the partner districts will also occur during the planning year and during Year 2 of the project to determine interests, career goals, and barriers to

attaining career goals, if teaching certification desired. In addition, each entering cohort of T³

Fellows will participate in a focus group to better understand their attitudes and beliefs at

program entry.

Measurable Goal 2: Increase the number of qualified and certified teachers in South Carolina (Performance Measures 1 and 2: Certification/Licensure and STEM Graduation)	
Objectives	**Outcomes**
1. Enable T³ Fellows to meet the necessary requirements for SC Program of Alternative Certification for Educators (PACE) following semester 1, which means that they are eligible to serve as instructor of record in South Carolina public schools	100% of T³ Fellows will meet the necessary requirements for SC Program of Alternative Certification for Educators (PACE) following semester 1
2. Improve pass rates and scaled scores in Years 3 and beyond based on initial analysis of program completers for initial State certification of teachers through coursework and residency program (GPRA PM 1; section 204(a), 3)	90% of T³ Fellows who complete the residency (including STEM completers) will attain initial State certification by passing all needed certification assessments (GPRA PM 2)
3. Increase percentage of teachers who meet applicable State certification and licensure requirements in high-needs academic areas, high needs certification areas and in high-needs elementary and secondary schools within the partner districts (section 204(a), 6-8)	Using baseline analysis of pass rates and scaled scores for initial State certification, demonstrate annual improvement in these areas among candidates in program (section 204(a), 3)

By Year 3, fewer than 5% of classrooms within partner schools have teacher vacancies at the beginning of the school year thus increasing the percentage of teachers who meet State certification requirements within the partner districts (section 204(a), 4)

By Year 3, partner districts have increased the diversity of their teaching staff thus increasing the percentage of teachers who meet applicable State certification requirements who are members of underrepresented groups (section 204(a), 5) |
| 4. Enable T³ Fellows to be eligible for SC credential advancement with eighteen-hours of graduate coursework following semester 3 | 90% of T³ Fellows will be eligible for SC credential advancement with eighteen-hours of graduate coursework following semester 3 |
| 5. Enable T³ Fellows to complete a thirty- | 90% of T³ Fellows will complete a thirty- |

hour Master's Degree in Teaching following semester 4	hour Master's Degree in Teaching following semester 4

Evaluation Strategies

To evaluate progress toward alternative certification and degree completion, REM Center evaluators will collect grades in each course as well as track T^3 Fellows throughout the residency process and master's degree attainment. Each year, the evaluators will provide principal investigators with the mean grades across courses and cohorts as well as completion rates to allow for an understanding of progress toward degree. REM Center evaluators will track progress on licensure certification assessments and attainment of initial State certification/licensure. Results on licensure assessments completed during residency process will be used to identify areas of strengths and improvement to inform cohorts of T^3 Fellows.

Measurable Goal 3: Increase the effectiveness of teacher residents and induction teachers through clinical experience, coursework, mentorship, and feedback using valid measures focused on literacy across the curriculum and inquiry-based STEM instruction with an emphasis on computer science and digital literacy (GPRA Performance Measure 6: Student Learning)	
Objectives	**Outcomes**
1. Use partnership with university faculty, district administrators, school-based administrators, school-based coaches, and school-based mentor teachers to facilitate a school-based, residency program and induction program to develop effective teachers in high-needs certification areas within partner districts (204(a), 1)	90% of T^3 Fellows demonstrate effectiveness (score of 2.5 or higher) on the South Carolina Teaching Standards 4.0 rubric at the end of their residency year (204(a), 1)

90% of T^3 Fellows demonstrate effectiveness (score of 3.0 or higher) on the South Carolina Teaching Standards 4.0 at the end of Induction Year 2 (204(a), 1) |
| 2. Provide courses (30 credit hours) leading to alternative certification and a master's degree that focus on evidence-based instructional strategies in literacy, teaching methods, action research, and inquiry-based STEM strategies focused on computer programming | |

3. Conduct observations of residents using the South Carolina Teaching Standards 4.0 rubric to deliver timely and improvement-oriented feedback to residents	
4. Incorporate formative assessments and Student Learning Objectives (SLO) to understand student achievement and incorporate strategies to improve student growth	75% of T^3 Fellows will meet their SOL goals based on student achievement data (e.g., pre and post-standardized assessments, end-of-grade/course assessments) (204(a), 1; GPRA PM 6)
5. Provide induction experience through Carolina Teacher Induction Program for two years upon completion of residency to continually improve instruction and support teachers within the classroom.	

Evaluation Strategies

This project will use the South Carolina Teaching Standards (SCTS) 4.0 rubric and

Student Learning Objectives (SLOs) to evaluate the effectiveness of the T^3 Fellows over a 3-year

period (Residency, Induction Year 1, and Induction Year 2). These align with the requirements

of Expanded ADEPT, the South Carolina Department of Education's Educator Effectiveness

System, for all public-school teachers in South Carolina. The College of Education at University

of South Carolina also uses the SCTS 4.0 observational rubric to provide feedback to preservice

teacher. The SCTS 4.0 contains four domains: instruction (12 factors), planning (3 factors),

environment (4 factors), and professionalism (4 factors). T^3 Fellows will receive one formal

observation each semester using the SCTS 4.0 rubric along with a pre-conference and post-

conference discussing areas for reinforcement and refinement. The REM Center evaluators will

review scores on each domain and item to determine mean scores, standard deviations, and

ranges. The REM Center evaluators will also examine correlations between factors and domains.

This information will be shared with the principal investigators to inform strategies and practice

within coursework or mentoring related to areas for improvement.

The T³ Fellows will develop Student Learning Objectives each semester/year that include baseline data on student achievement as well as goals for students at the end of the semester/year. T³ Fellows will use the South Carolina Department of Education template for SLOs, and they will use formative assessments to deconstruct student performance and develop strategies and goals for these students. T³ Fellows will submit their baseline and final SLO information each year of program participation. REM Center evaluators will document progress in meeting SLO targets among all T³ Fellows. In addition, REM Center evaluators will collect formative assessment data from T³ Fellows, as available, to understand student progress and work with principal investigators to ensure SLO goals are rigorous, appropriate, and accurately reflect student progress.

Measurable Goal 4: Increase retention of effective teachers through residency program and subsequent induction process that provides teaching experience, professional development, and support to meet the needs of teachers during their residency year and induction years (GPRA Performance Measures 3, 4, and 5)	
Objectives	**Outcomes**
1. Provide strategies, modeling, and mentoring within the program to increase the likelihood that teachers remain in the profession (section 204(a), 2)	T³ Fellows will be retained at higher rates than state and district overall retention rates 90% of T³ Fellows will persist as teachers after residency completion (GPRA PM 3)
2. Use results from validated effectiveness measures, survey data, and focus group results to enhance strategies and mentoring related to needs identified to retain T Fellows	90% of mentor teachers indicate that the T³ Fellows are prepared to be the teacher of record after the residency portion of the project 85% of T³ Fellows will be employed the year following their initial year as teachers of Record (GPRA PM 4) 80% of T³ Fellows will be teaching as of Year 3 of the program (GPRA PM 5; section 204(a), 2)
3. Develop partnerships with key stakeholders in partner district to align efforts and reduce stress on T Fellows and other teachers within the districts	70% of T³ Fellows will be teaching in the partner districts as of Year 3 90% of teachers prepared through residency

	program report that they have the skills and preparation to be effective teachers

Evaluation Strategies

REM Center evaluators will review annual teacher retention data at the state level, within the partner districts, and among the T^3 Fellows to determine success of the project in retaining teachers at rates that exceed the averages within the state and districts. State and partner district data are available in January/February following each academic year. Data related to the retention of T^3 Fellows will be gathered in September of each year. To gauge perceptions and experiences of T^3 fellows, REM evaluators will conduct an annual survey with all T^3 Fellows each fall and an annual survey with each cohort of T^3 Fellows each spring. In addition, mentor teachers will be surveyed at the end of the residency period to determine the preparation and effectiveness of the T^3 Fellow as they prepare to enter their first year of teaching. Finally, if any T^3 Fellows withdraw from the project, exit interviews will be conducted with these Fellows to better understand aspects that led to their withdrawal.

References

Ambrosetti, A., Allen Knight, B., & Dekkers, J. (2014). Maximizing the potential of mentoring: A framework for pre-service teacher education. *Mentoring & Tutoring: Partnership in Learning, 22*(3), 224-239.

Anderson, A., Dragsted, S., Evans, R., & Sorensen, H. (2004). The relationship between changes in

Asay, L. D., & Orgill, M. (2010). Analysis of essential features of inquiry found in articles published in

Ashton, P. (1984). Teacher efficacy: A motivational paradigm for effective teacher education. *Journal of Teacher Education*, 35, 28-32.

Avraamidou, L., (2013) Prospective elementary teachers' science teaching orientations and experiences

Avraamidou, L., & Zembal-Saul, C. (2005). Giving priority to evidence in science teaching: A first-

Avraamidou, L., & Zembal-Saul, C. (2010). In search of well-started beginning science teachers:

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 117-148.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company

Benedict-Chambers, A. (2016). Using tools to promote novice teacher noticing of science teaching

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education, 5*(1), 7-

Blanchard, M. R., Southerland, S. A., & Granger, E. M. (2009). No silver bullet for inquiry: Making sense of teacher change following an inquiry-based research experience for teachers. *Science Education*, 93, 322–360.

Borko, H. & Mayfield, V. (1995). The roles of the cooperating teacher and university in learning to teach. *Teaching and Teacher Education, 11*(5), 501-518.

1

Britton, E., McCarthy, E., Ringstaff, C., & Allen, R. (2012). *Addressing challenges faced by early-career mathematics and science teachers: A knowledge synthesis.* Retrieved from Website for Knowledge Management and Dissemination Project http://www.mspkmd.net/papers.

Bradbury, L. U. (2010), Educative mentoring: Promoting reform-based science teaching through mentoring relationships. Sci. Ed., 94: 1049-1071. doi:10.1002/sce.20393

Bradbury, L.U. & Koballa, T.R. (2008). Borders to cross: Identifying sources of tension in mentor-intern relationships. *Teaching and Teacher Education, 24*, 2132–2145.

Bullough, J. R., & Draper, R. J. (2004). Mentoring and the emotions. *Journal of Education for Teaching*, *30*(3), 271–288.

Bullough, R., Burrell, J., Young, J., Clark, D., Erickson, L., Earle, R. (1999). Paradise unrealized: Teacher education and the costs and benefits of school-university partnerships. *Journal of Teacher Education, 50*, 381-390.

Bybee, R., (2015). *The BSCS 5E instructional model: creating teachable moments.* Arlington, Virginia: NSTA Press.

Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2017). *Learning to improve: How American's schools can get better at getting better*. Cambridge, MA: Harvard Education Press.

Cantrell, P., Young, S., & Moore, A. (2003). Factors affecting science teaching efficacy of preservice elementary teachers. *Journal of Science Teacher Education, 14*, 177-192.

Center for Educator Recruitment, Retention, & Advancement. (2019). *South Carolina annual educator supply and demand report*. Author.

Compton-Lilly, C. (2015). Reading lessons from Martin: A case study of one African American student. *Language Arts*, *92*(6), 401.

Costa, A.L. & Garmston, R.J. (2016*). Cognitive Coaching: Developing Self-Directed Leaders and Learners.* Lanham, MA: Rowman and Littlefield.

Curcio, R. (2017). *The relationship between attending a shared learning experience and mentoring interactions in the final internship* (Doctoral dissertation). University of Florida, Gainesville.

Duke, N. K., & Pearson, P. D. (2009). Effective practices for developing reading comprehension. *Journal of education*, *189*(1-2), 107-122.

Ebbers, S. M., & Denton, C. A. (2008). A root awakening: Vocabulary instruction for older students with reading difficulties. *Learning Disabilities Research & Practice*, *23*(2), 90-102.

Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., &   Schnakenberg, J. W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of educational research*, *79*(1), 262-300.

Ehri, L. (2004). Teaching phonemic awareness and phonics. *The voice of evidence in reading research*, 153-186.

Escamilla, K., Hopewell, S., Butvilofsky, S., Sparrow, W., Soltero-González, L., Ruiz-Figueroa, O., & Escamilla, M. (2014). *Biliteracy from the start: Literacy squared in action* (pp. 25-26). Philadelphia, PA: Caslon Publishing.

Feiman-Nemser, S. (2012). *Teachers as Learners*. Cambridge, MA: Harvard Education Press.

Fishman, B. J. (2014). Designing usable interventions: Bringing student perspectives to the table. *Instructional Science, 42*(1), 115-121.

Frances Langdon, Lorrae Ward, (2015) "Educative mentoring: a way forward", *International Journal of Mentoring and Coaching in Education, (4)*4, 240-254, doi.org/10.1108/IJMCE-03-2015-0006.

Friend, M., & Cook, L. (2000). *Interactions: Collaborative skills for school professionals*. Boston: Allyn and Bacon.

Gardiner, W., & Robinson, K. (2009). Paired field placements for preservice teachers: A means for collaboration. *The New Educator, 5*(1), 81–94.

Garet, M.S., Porter, A.C., Desimone, L., Birman, B. &Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal, 38*(4*)*, 915-945.

Garett, J., (2019), South Carolina Annual Educator Supply & Demand Report (2018-19 School Year), *South Carolina Center for Educator Recruitment, Retention, and Advancement*, retrieved from, https://www.cerra.org/uploads/1/7/6/8/17684955/2018-19_supply_demand_report_update_jan_16.pdf

Gray, L., & Taie, S. (2015). Public School Teacher Attrition and Mobility in the First Five Years: Results from the First through Fifth Waves of the 2007-08 Beginning Teacher Longitudinal Study. First Look. NCES 2015-337. *National Center for Education Statistics*.

González, N., Neff, D., Amanti, C., & Moll, L. (2006). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. In *Funds of knowledge* (pp. 83-100). Routledge.

Henry, G. T., Purtell, K. M., Bastian, K. C., Fortner, C. K., Thompson, C. L., Campbell, S. L., & Patterson, K. M. (2013). The effects of teacher entry portals on student achievement. *Journal of Teacher Education, 65*(1), 7 - 23.

Hodges, T. E., & Mills, H. (2014). Embedded Field Experiences as Professional Apprenticeships In K. Karp & A. R. McDuffie (Eds.), *Annual Perspectves in Mathematics Education 2014: Using Research to Improve Instruction* (pp. 249 - 260). Reston, VA: National Council of Teachers of Mathematics.

Ingersoll, R., Merrill, L., & Stuckey, D. (2014). Seven trends: the transformation of the teaching force, updated April 2014. CPRE Report (#RR-80). Philadelphia: Consortium for Policy Research in Education, University of Pennsylvania.

Ivey, G., & Baker, M. I. (2004). Phonics instruction for older students? Just say no. *Educational leadership*, *61*(6), 35-39.

Klassen, R. M., Tze, V. M. C., Betts, S. M., & Gordon, K. A. (2011). Teacher efficacy research 1998-2009: Signs of progress or unfulfilled promise? *Educational Psychology Review*, 23, 21-43.

Knight, J. (2007). *Instructional Coaching: A Partnership Approach to Improving Instruction.* Thousand Oaks, CA: Corwin Press.

Koch, J., & Appleton, K. (2007). The effect of a mentoring model for elementary science professional development. *Journal of Science Teacher Education, 18*, 209–231. doi:10.1007/s10972-006-9036-1.

Labone, E. (2004). Teacher efficacy: Maturing the construct through research in alternative paradigms. *Teaching and Teacher Education*, 20, 341–359.

Lampert, M., Franke, M. L., Kazemi, E., Ghousseini, H. N., Turrou, A. C., Beasley, H., Crowe, K. (2013). Keeping it complex: Using rehearsals to support novice teacher learning of ambitious teaching. *Journal of Teacher Education, 64*(3), 226–243.

Lotter, C., Thompson, S., Dickenson, T., Smiley, W., Bilue, G., & Rea, M. (2017). The Impact of a Practice-Teaching Professional Development Model on Teachers' Inquiry Instruction and Inquiry Efficacy Beliefs. *International Journal of Science and Mathematics Educatio*n. Pp 1-19. https://doi.org/10.1007/s10763-016-9779-x

Lotter, C., Smiley, W., Thompson, S., & Dickenson, T., (2016). The impact of a professional development model on middle school teachers' efficacy and implementation of inquiry. *International Journal of Science Education.* 38:18, 2712-2741, DOI: 10.1080/09500693.2016.1259535

Luft, J. A. (2001). Changing inquiry practices and beliefs: The impact of an inquiry-based professional development programme on beginning and experienced secondary science teachers. International *Journal of Science Education*, 23, 517-534.

Luft, J., (2009). Beginning secondary science teachers in different induction programs: The first year of teaching. *International Journal of Science Education, 31*(17), 2355–2384. doi:10.1080/09500690802369367

Luft, J., Nixon, R., Dubois, S., & Campbell, B., (2015). Supporting newly hired teachers of science: attaining teacher professional standards. *Studies in Science Education, 51*(1), 1-48, DOI: 10.1080/03057267.2014.980559

McDevitt, T. M., Gardner, A. L., Shaklee, J. M., Bertholf, M. M., & Troyer, R. (1999). Science and mathematics instruction of beginning elementary teachers. *Journal of Science Teacher Education, 10*, 217-233. doi:10.1023/A:1009487031571.

Marbach-Ad, G., & McGinnis, R., (2008). To what extent do reform-prepared upper elementary and middle school science teachers maintain their beliefs and intended instructional actions as they are inducted into schools? *Journal of Science Teacher Education, 19*, 157-182. doi:10.1007/s10972-007-9085-0.

Mulholland, J., & Wallace, J. (2001). Teacher induction and elementary science teaching: Enhancing self-efficacy. *Teaching and Teacher Education, 17*, 243-261.

4

National Council for Accreditation of Teacher Education. (2010). Transforming teacher education through clinical practice: A national strategy to prepare effective teachers. Washington, DC: Author

National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. National Institute of Child Health and Human Development, National Institutes of Health.

National Research Council. (2012). *A framework for k-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: The National Academies Press.

NGSS Lead States. 2013. *Next Generation Science Standards: For States, By States*. Washington, DC: The National Academies Press.

Penuel, W. R., Fishman, B. J., Cheng, B. H., & Sabelli, N. (2011). Organizing research and development at the intersection of learning, implementation, and design. *Educational Researcher, 40*(7), 331-337.

Rees, C., Pardo, R., & Parker, J. (2013). Steps to opening scientific inquiry: Preservice teachers' practicum experiences with a new support framework. *Journal of Science Teacher Education, 24*, 475–496. doi:10.1007/s109720129315y.

Roberts, G., Torgesen, J. K., Boardman, A., & Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice*, *23*(2), 63-69.

Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of randomized field trial. *The Journal of Educational Research*, 101, 50-60.

Roth, K., Bintz, J., Wickler, N., Hvidsten, C., Taylor, P., Caine, A., & Wilson, C., (2017). Design principles for effective video-based professional development. *International Journal of STEM Education*, 4(31), doi:10.1186/s40594-017-0091-2.

Schwille, S.A. (2008). The professional practice of mentoring. *American Journal of Education, 115*(1), 139–167.

Settlage, J. (2000). Understanding the learning cycle: Influences on abilities to embrace the approach by preservice elementary school teachers. *Science Education, 84*, 43-50.

Singer, J., Lotter, C., Gates, A., & Feller, R. (2011). Exploring a model of situated professional development: Impact on classroom practice. *Journal of Science Teacher Education*. 22, 203-227.

The Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, 5-8.

Thompson, S., & Emmer. E., (2019). Closing the Experience Gap: The Influence of an Immersed Methods Course in Science, *Journal of Science Teacher Education, (30)*3, 300-319, DOI: 10.1080/1046560X.2018.1562811.

Tschannen-Moran, M., Hoy, A., & Hoy, W. (1998). Teacher Efficacy: Its meaning and measure. *Review of Educational Research*, 68, 202-248.

Valencia, S.W., Martin, S.D., Place, N.A. & Grossman, P. (2009). Complex interactions in student teaching. *Journal of Teacher Education, 60*(3), 304-322.

Volkmann, M. J., Abell, S. K., & Zgagacz, M. (2005). The challenges of teaching physics to preservice elementary teachers: Orientations of the professor, teaching assistant, and students. *Science Education, 89*, 847–869. doi:10.1002/sce.20077.

Wang, J. & Odell, S.J. (2002). Mentored learning to teach according to standards-based reform: A critical review. *Review of Educational Research*, 72(3), 481-546.

Wang, J., Odell, S. J., & Schwille, S. A. (2008). Effects of teacher induction on beginning teachers' teaching: A critical review of the literature. *Journal of Teacher Education, 59*(2), 132–152.

Watters, J. J., & Ginns, I. S. (2000). Developing motivation to teach elementary science: Effect of collaborative and authentic learning practices in preservice education. *Journal of Science Teacher Education, 11*, 301-321.

Wilkins, E., Shin, E., & Ainsworth, J. (2009, Spring). The effects of peer feedback practices with elementary education teacher candidates. *Teacher Education Quarterly, 36*(2), 79-93.

Windschitl, M., Thompson, J., Braaten, M., & Stroupe, D. (2012). Proposing a core set of instructional practices and tools for teachers of science. *Science Education, 96*, 878–903.

Zeichner, K. (2002). Beyond traditional structures of student teaching. *Teacher Education Quarterly, Spring,* 59-64.

Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college- and university-based teacher education. *Journal of Teacher Education*, 89, 1-2. doi:10.1177/0022487109347671.