Journal of SPECIAL EDUCATION preparation

BALL STATE UNIVERSITY & TEACHER EDUCATION DIVISION
VOLUME 3, ISSUE 1 | SPRING 2023 | ISSN: 2768-1432

Journal of SPECIAL EDUCATION preparation

Volume 3, Issue 1 | SPRING 2023
DOI: 10.33043/JOSEP.3.1
ISSN: 2768-1432

PUBLICATION

JOSEP is published and supported by Ball State University Libraries in Muncie, Indiana in partnership with the Teacher Education Division of the Council for Exceptional Children

Elizabeth Meyer,
The Mckinley Avenue Agency,
Ball State University
Creative Director, Publication Design

Link to publication:
OpenJournals.bsu.edu/JOSEP

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BALL STATE UNIVERSITY

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FROM *the*
EDITOR

Strengthening Existing Pathways in Special Education Teacher Preparation: An Introduction from the Guest Editor

Sarah A. Nagro
Guest Editor of JOSEP, George Mason University

All students deserve great teachers. Students with the most intensive needs, such as students with disabilities, need great teachers. Yet we do not have enough great teachers to meet the needs of every student with a disability. Since 1990, the U.S. Department of Education has published the national listing of teacher shortage areas (found here tsa.ed.gov), and special education has chronically topped the charts. In fact, since the historic passing of the Education for All Handicapped Children Act of 1975 (also known as Public Law 94-142), the precursor to the Individuals with Disabilities Education Act (IDEA; 2004), which mandates access to a free and appropriate public education for all student with disabilities, the demand for special education teachers has outpaced the supply (Billingsley & Bettini, 2019). Year after year, almost every state reports a shortage of special education teachers (Department of Education, 2021).

To over simplify the exceedingly complex special education teacher shortage, we are falling short on attracting enough special education teacher candidates, we are falling short on preparing special education teacher candidates in a manner that leads to profession-readiness, and we are falling short on retaining the existing workforce. In response, many states have changed existing policies in an attempt to remove perceived barriers to the profession. Relaxing licensure requirements may create short term solutions by ensuring an adult is in every classroom, but the 'warm body' approach only exacerbates long-term complications. Placing fully-prepared special education teachers in classrooms results in teachers who are more likely to stay in the profession, are better equipped to implement evidence-based and high leverage practices, and are able to positively influence academic achievement for students with disabilities (Ondrasek et al., 2020). On the contrary, placing underprepared or unprepared special education teachers with a provisional license, emergency license, or no license in high needs classrooms results in attrition rates that are two to three times higher and can lead to negative effects on student achievement (Podolsky et al., 2016). In fact, the difference between students who learn from great teachers and students who learn from ineffective teachers is around one grade-level equivalent in annual achievement growth each year (Hanushek, 2011; Hanushek & Rivkin, 2006).

Unfortunately, 'lowering the bar' on special education teacher preparation requirements is becoming common practice. For example, in California, more than one in every five teachers in special education schools left their positions between 2015 and 2016 and in the following academic year (2016-2017), two out of every three special education teachers who entered the field did so without having completed a preparation program (Ondrasek et al., 2020). In Nebraska and Pennsylvania, hiring agencies are offering undergraduate students long-term substitute teaching positions to fill vacant classrooms (Iasevoli, 2018). Oklahoma and Utah are among the states hiring individuals with any college degree and a passing grade on a subject matter exam (Grier et al., 2017). The New York Board of Regents removed the literacy exam requirement for prospective teachers because too many people were failing it (Taylor, 2017), and one large school district in Arizona is no longer requiring formal

teacher training and is instead hiring parents (Strauss, 2017). Alabama "adjunct instructors" can teach secondary education with as little as a high school diploma and a clear background check (Klass, 2016). Despite the every-growing list of states moving away from profession-ready preparation, we know formal preparation is closely associated with teacher retention and student success (Billingsley & Bettini, 2019; Carver-Thomas & Darling-Hammond, 2019; Gilmour & Wehby, 2020).

Teacher and P-12 student success can be achieved when special education teacher candidates are fully prepared in a way that leads to profession-readiness. Successful special education teacher preparation programs are designed to ensure that each special educator has a comprehensive and meaningful learning experience paving the path to profession-readiness. Such preparation results in special educators who have the knowledge, skills, and dispositions to plan and deliver specialized instruction, develop and implement individualized education programs (IEPs), assess and monitor student progress, provide behavior support, collaborate with colleagues, families, and leadership, advocate for students, and engage in ongoing professional development and reflection. Highly impactful special education teacher preparation programs equip teacher candidates with the ability to adapt to student needs in-the-moment by drawing upon prior knowledge and acquired experience. Such level of skill is acquired through practice-based learning opportunities that are supported by modeling, feedback, and reflection and scaffolded from simple to more complex over time (Leko et al., in press; Nagro, 2022). It is no surprise that teachers who complete teacher education programs feel significantly better equipped across most dimensions of teaching when compared to underprepared teachers (Darling-Hammond et al., 2005; Jang & Horn, 2017), but not all preparation programs are designed equally.

The criticism has been special education teacher preparation is scattered, disjointed, and lacking in consistent opportunities for practice (Leko et al., 2015; Nagro et al., 2022; Nagro & deBettencourt, 2017). Teacher candidates that graduate from less successful teacher preparation programs feel shocked by the realities of the field further perpetuating the cycle of teacher turnover and warm-body syndrome solutions. Focusing on any one aspect of attracting, preparing, and retaining special educators will not provide a comprehensive solution to systemic problem, but given the complexity of this crisis, finding concrete solutions for any one area can lead to lasting positive change. In this two-part special issue, we aim to share concrete solutions for individual special education teacher educators as well as special education teacher preparation programs more collectively as we work towards our field's most pressing issue, the special education teacher shortage. Specifically, the first part of this two-part series will focus on strengthening existing pathways into the profession. The second part of this series will focus on creating new pathways into the profession. Collectively, we hope to exemplify how special education teacher educators can mitigate the special education teacher shortage from our perch.

First, Rock and her co-authors present a systems-thinking framework to support an intentional shift in perspectives and approaches to addressing the chronic spe-

"Successful special education teacher preparation programs are designed to ensure that each special educator has a comprehensive and meaningful learning experience paving the path to profession-readiness.

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Sarah A. Nagro, Ed.D. is an associate professor of special education at George Mason University where her research focuses on preparing profession-ready teachers through meaningful field-based experiences that emphasize reflection, video analysis, self-evaluation, and professional buy-in. Sarah is interested in understanding how to help teacher candidates and novice teachers find success when educating students with disabilities with the goal of retaining high quality professionals.

cial education teacher shortage without inadvertently replicating or intensifying the problem in their article titled, "Ameliorating the Special Education Teacher Crisis: Systems Thinking and Innovative Approaches." The framework is centered around a collective 'big idea' with a focus on shared responsibilities within the systems of teacher preparation, districts and schools, and society. Rock and team describe action steps and a four-stage process for engaging in systems thinking Additionally, innovative strategies and first-hand examples of solutions from within education and other professions are shared as recommendations for strengthening pathways to the profession.

Second, O'Brien and her co-authors share their first-hand experiences as teacher educators designing an undergraduate special education teacher licensure program by redesigning a graduate-level licensure program in their article titled, "An Undergraduate Program to Address the Teacher Shortage: What We Thought We Knew." The article describes their enlightening program revision activities, including building an advisory board, conducting a needs assessment, developing a curriculum map, creating an action plan, and reviewing ongoing activities for continuous improvement. O'Brien and her team explain the broader implications of using data-based program revisions, systematic prioritization through a Q-Sort Activity, and program review activities that other programs might follow to make program improvements as we strive for preparing profession-ready special educators and addressing the special education teacher shortage.

Third, Sallese and her co-authors propose five professional dispositions that correspond with profession-readiness and special educator success that can be targeted during formal preparation. The authors go on to explain how the development of such dispositions can be achieved through a teacher preparation-multi-tiered system of supports (TP-MTSS) in their article titled, "Multi-Tiered System of Supports for Teacher Preparation: A Framework to Attract, Retain, and Prepare Special Educators." The article highlights the incorporation of an MTSS framework in an undergraduate special education teacher preparation program, including interventions, data-based decisions, and explicit instruction of core competencies, and suggests that expanding the MTSS framework into higher education can be an innovative approach for attracting, retaining, and preparing profession-ready special educators.

Fourth, Massey and Strong take a deep dive into the promising practices for adopting a blended learning model within special education teacher preparation practices in their article titled, "Innovative Approaches for Preparing Special Education Preservice Teachers." In this article, Massey and Strong propose a flipped-classroom model that is supported through instructional technology. These authors detail many online instructional resources for (a) creating and facilitating asynchronous assignments, (b) designing student-centered, collaborative, and interactive learning opportunities, and (c) supporting practice-based supervision activities. Massey and Strong's *Active Learning Tool at a Glance* makes for a helpful reference tool when planning high impact special education teacher preparation classes.

Fifth, Macedonia and her co-authors discuss the challenges of special education teacher shortages in rural areas of the United States, including geographic barriers, isolation, and limited resources, and emphasizes the need for innovative partnerships to recruit and retain special educators in their article titled, "Forging Partnerships to Address Teacher Shortages in Rural Settings: Engaging Key Players." Macedonia and her team of

co-authors describe a partnership between the CEEDAR Center, Mississippi Department of Education, Education Preparation Programs, and special education directors in rural Mississippi that use *The Educator Shortages in Special Education Toolkit* to develop a Special Educator Mentoring Framework. This mentoring framework focuses on a cyclical process for planning, designing, implementing, and evaluating efforts to address the special educator shortage and strengthening teaching practices in rural regions.

Finally, Chang and Drescher focus on the importance of supporting new special education teachers as they transition into the profession in their article titled, "Addressing Attrition: Multi-level Mentorship Model." Chang and Drescher outline the role of special education teacher educators and teacher education programs during teacher induction. Specifically, they discuss the importance of mentorship in retaining early career special education teachers and proposes a model where early career teachers are supported by a network of alumni who are mentored by university faculty to address gaps in administrative roles. This approach aims to improve attrition rates of early career special educators and promote leadership roles for in-service special educators to address the shortage of special education teachers and fill critical administrative roles with special education expertise.

Taken together, this collection of articles offers concrete strategies for reviewing, directing, enhancing, supporting, and extending existing pathways into the profession. I would like to conclude by thanking Dr. Andy Markelz and his associate editors for allowing me to be part of this special issue series. Thank you to the authors for their high impact contributions. I also want to thank the awesome JOSEP reviewers and copyediting team for their support of this issue. Finally, I would like to thank OSEP funded doctoral students Gino Binkert, Christopher Claude, Margret Gerry, Kevin Monnin, and Katherine Szocik for their copyediting and APA expertise.

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Ameliorating the Special Education Teacher Crisis: Systems Thinking and Innovative Approaches

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Journal of Special Education Preparation
3(1), 8-17

DOI: 10.33043/JOSEP.3.1.8-17
openjournals.bsu.edu/JOSEP

ABSTRACT

Chronic and pervasive special education teacher (SET) shortages have interfered with state, district, and school efforts to recruit and retain effective teachers for students with disabilities. Unfortunately, these shortages have worsened post-pandemic due to early retirements, low unemployment rates, and career changes. The purpose of this article is to provide a systems thinking (ST) framework to help stakeholders consider the complex and interacting systems in which these shortages occur (i.e., teacher preparation, district and schools, society). We consider specific elements within these systems, their interconnections, with a focus on identifying steps and ideas stakeholders can use to understand contributors to the shortage crisis, while providing strategies and innovative ideas for greater sustainability. We also offer real examples of ST solutions used within teacher education programs, schools, and other professions. To further bolster ST, we conclude with examples of innovations outside of education with ideas to bridge these concepts into potential pathways to address SET shortages.

KEYWORDS

Special education, systems-thinking, teacher shortages

Systems thinking (ST) broadly defined is a "a set of synergistic analytic skills used to improve the capability of identifying and understanding systems, predicting their behaviors, and devising modifications to them in order to produce desired effects" (Arnold & Wade, 2015, p. 675). Systems thinking has been used to better understand, effectively influence, and yield improved outcomes, within and across various systems, including but not limited to school systems (see Meadows, 2008; Stroh, 2015). For instance, professionals in related human service fields, such as public health and social work, also have experienced workforce crises.

When using ST to address a longstanding problem, such as the special education teacher (SET) workforce crisis, stakeholders need to intentionally "shift" how they both view and approach the problem (Meadows, 2008; Stroh, 2015). These "shifts" in perspectives allow stakeholders to understand both the short- and long-term impacts of the problem and to identify new approaches to solve the problem (Meadows, 2008; Stroh, 2015). Creating shifts among stakeholders begins with developing a clear understanding of the "big picture" (i.e., the SET crisis), while increasing awareness of and fostering shared responsibility for addressing the challenges (Stroh, 2015). Stakeholders who overlook the importance of shifting their views, responsibilities, and approaches often inadvertently replicate (or intensify) the problem (Meadows, 2008; Stroh, 2015).

In this paper, we describe the application of Stroh's (2015) ST approach at the SET preparation level and the district and school levels to describe how we might approach and respond effectively to the longstanding shortage. We also describe the action steps, and four stage process stakeholders can use to carry out ST based on their unique SET workforce needs. To further support implementation, we offer a snapshot of how university faculty members used the four stages to launch a

program aimed at increasing the SET supply. Finally, we describe innovative approaches used outside of education that can also be used to strengthen ST.

SYSTEMS THINKING IN ACTION: ANALYSIS OF SPECIAL EDUCATION TEACHER EDUCATION PROGRAMS

We used Stroh's (2015) four-stage ST process (i.e., establish readiness for change, face existing realities, commit to change, and bridge the gap between the undesired and desired outcome[s]) as the overarching framework for analyzing SET programs' role in the SET workforce crisis. When considering the content in Table 1 (moving from left to right) many of the past and present workforce solutions have been or are currently supported by the U.S. Department of Education Office of Special Education Programs (OSEP) 84.325 K and D funded projects as well as through IDEA flow through funds. The solutions to bridge the gap identified in Table 1 (i.e., modifications, alternatives) might be considered as a basis for future funding efforts to improve the availability of effective SETs. Moreover, stakeholders could add additional or alternative solutions to current practices or in place of existing solutions. Although these are clearly not exhaustive, the content included in Table 1 serves, in part, not only to synthesize and illustrate ST ideas, but also as the basis for stakeholder discussions about what needs to change and why.

Systems Thinking in Action: Analysis of School Districts

The approach and content delineated in Table 2 also emerged from Stroh's (2015) four-stage ST process for analyzing both districts' and schools' roles in the SET workforce crisis. Although we replicated the ST process, used in Table 1, the content included in Table 2 differs. Specifically, the content pertains to district and school related SET preparation, recruitment, and retention.

Systems Thinking in Action: SET Programs and School Districts

Using known system issues to analyze two parts separately (see Tables 1 and 2) reflects important aspects of ST. When stakeholders carry out Stroh's (2015) four-stage process in isolation, the results typically reflect short term solutions. Although short term solutions may be vital in responding quickly to a crisis, they often backfire over time (Meadows, 2008; Stroh, 2015). By contrast, longer term solutions are generated when diverse system(s) stakeholders convene and intentionally use the ST processes and tools to identify root causes, assume shared responsibility, commit to change, and carry out modifications or interventions. When applying a longer term, ST approach (Stroh, 2015), SET educators and district personnel convene with other key stakeholders. Together, these diverse stakeholders use ST processes, such as Stroh's (2015) action steps and stages, to gain new insights into the crisis achieving longer, rather than shorter term solutions.

SYSTEMS THINKING ACTION STEPS AND STAGES FOR GENERATING SOLUTIONS

In this section, we describe ST action steps and stages (see Stroh, 2015) stakeholders can use to analyze, innovate, and improve results based on their unique SET workforce needs. These action steps and related stages have the potential to offer stakeholders not only greater understanding of the complexities in the SET workforce crisis but also how to intervene effectively.

Action Step 1: Understand the "Big Picture"

To understand the "big picture" (Stroh, 2015), stakeholders should use current specific SET workforce data related to their program(s) or district(s). For example, if SET faculty from several geographically connected universities are working to address the SET crisis, they should join with districts in their region to collect and analyze personnel data—allowing them to understand the nature of shortages in their area. As they examine data, stakeholders may find a surplus of certified SETs, who either separated prematurely from the workforce, or never entered it. Rather than solely recruit a new supply of SETs, these stakeholders should make efforts to understand this reserve pool and consider incentives to hire them for full or part-time work.

Action Step 2: Increase Awareness of and Foster Shared Responsibility for the Crisis

One of the tenants of ST centers on optimizing the relationships between the parts of the system(s) (Meadows, 2008; Stroh, 2015). Neither SET university nor district personnel are solely responsible for the workforce crisis, so neither can solve the crisis alone. Through this partnership approach, diverse stakeholders can cooperate, rather than compete, to achieve better short and long-term results. Drawing on Action Step 1, diverse stakeholders can combine their recruitment efforts by jointly identifying and targeting workforce surplus supply.

Action Step 3: Take a Deeper Dive to Influence the Whole System

Although the first two steps matter, they are insufficient to change the entire system and yield better results (Stroh, 2015). According to Stroh (2015), when

TABLE 1: Systems Thinking Analysis of SET Education Programs

STAGE 1 *Establish readiness for change*	**STAGE 2** *Face existing realities*	**STAGE 3** *Commit to change*	**STAGE 4** *Bridge gap for better outcomes*
System Issue	Past /Present Solutions	Barriers that May Limit Success	Possible Solutions to Consider
Decreases in Federal SET personnel development funds	Recruit and support SET preparation with state funds (Espinoza et al., 2018) Continue educating policy makers about the importance of fully funding IDEA.	May have reduced state funds due to pandemic related or other costs	Apply to alternative funding sources (e.g., private foundations, corporate sponsorships) Offer service scholarships, loan forgiveness (Espinoza et al., 2018)
Declines in SET enrollment in preparation programs	Recruit teachers from other disciplines in higher education Recruit targeted groups with paid internships (Owings et al., 2011)	Insufficient numbers of individuals interested in becoming SETs in U.S.	Consider international direct hires (Heubeck, 2022) Develop agreements for free community college credits/degrees.
Time for traditional SET preparation	Offering Alternative Certification options (Aragon, 2016; Robertson & Singleton, 2010)	Alternatively prepared teachers more likely to leave (Redding & Smith, 2016)	Provide more intensive induction and mentoring support for underqualified SETs
Specific SET shortage areas	Offering cohort programs to fill targeted areas (Haines et al., 2017) Recruit paraprofessionals, substitute teachers, or high school students in grow your own program (Sutcher et al., 2016; Swanson, 2011)	Insufficient numbers of individuals interested in becoming SETs	Determine specific numbers of teachers needed to teach students in specific exceptionalities. Identify adults from foster care system as they have college support and understand diversity of issues (Steele, 2018). Consider online games for recruitment; used in STEM to recruit students (Boyington, 2018)
Inadequate clinical experience	Enhance clinical experiences by determining the scope, selecting priority activities, identifying products/outcomes, assessing outcomes, and providing ongoing feedback (Nagro & deBettencourt, 2017)	Limited access to clinical sites and/or inadequate supply of supervisors, mentors, coaches	Use technology to increase supervision, mentoring, and coaching, during coursework and clinical experiences (Dieker et al., 2014; Horn & Rock, 2022)

TABLE 2: Systems Thinking Analysis for School District Personnel

STAGE 1 *Establish readiness for change*	**STAGE 2** *Face existing realities*	**STAGE 3** *Commit to change*	**STAGE 4** *Bridge gap and yield better outcomes*
System Issue	Past/Present Solution	Barriers Limiting Success	Alternatives to Consider
Inadequate salary	Provide financial incentives through targeted or forgivable loans (Feng & Sass, 2018; Sutcher et al., 2016)	Limited fiscal resources at district, state, and/or national levels.	Apply for grants to increase SET salary, signing bonuses, and/or offer additional compensation for other roles (Espinoza et al., 2018). Consider pay for teachers higher than administrative positions (see Schumann, 2018). Using artificial intelligence to automate some of the routine tasks to reduce the overall SET workload
Low status	Business as usual (i.e., doing nothing to elevate the status of SETs).	Low SET status remains unchanged.	Engaging in marketing through those in the profession who are viewed as "positive" ambassadors. Partnering with public television station to create a Teaching Network Channel (like the Food Channel (Terenizo, 2015).
Inadequate preparation	Fostering partnership programs between universities and schools (Aragon, 2016; Brownell & Sindelar, 2016) Providing residency models (Guha et al. 2017)	Partnerships are often fraught with conflict Residency models may provide SET candidates with insufficient preparation	Increasing technology enabled opportunities for practice-based SET professional development (e.g., TeachLivE [Dieker et al., 2014], Real-time, In Ear Coaching [Rock et al., 2014), Video Coaching [Coogle et al., 2017])
Poor working conditions	Producing SET survival books and guides and "stress busting" strategies (Martin & Hauth, 2015).	May result in victim blaming and limit improvement in working conditions.	Partnering with district and national teacher unions to advocate for improved conditions. Providing leadership development about supporting SETs and improving working conditions (Billingsley et al., 2020). Employing teams of professionals to create support networks (Wyte-Lake et al., 2013). Using Glassdoor. com to improve working situation (Rock & Billingsley, 2015).
Lack of supportive leadership preparation	Providing principals/leaders with preparation about disability, special education, and supporting SETs.	Lack of preparation in general and tends to focus on legal aspects of special education	Facilitate collective responsibility for students with disabilities across the school (Billingsley et al., 2020).

diverse stakeholders take deeper dives into the system(s), they do so to identify and understand the parts of the system, the connections between the parts, how the system has functioned and is currently functioning, allowing them to identify modifications that might yield better results. Thus, diverse stakeholders ST efforts can be guided by using Stroh's (2015) four-stage framework.

Stage 1

Building the foundation for change begins when diverse stakeholders convene and acknowledge the SET workforce related issues each faces as well as what they want to change. However, cultivating collective readiness for change involves preparing stakeholders to use ST processes while engaging in difficult conversations.

Stage 2

Facing existing realities requires understanding and acceptance of the problem (Stroh, 2015). For example, SETs and district personnel may recognize that under-preparing SETs is a problem that contributes to their departure from the workforce and adversely impacts educational outcomes for students with disabilities. This insight may lead the stakeholders to realize that when attempting to recruit individuals from the SET reserve pool, they need to consider how to address this underlying (and known) issue (e.g., under or outdated preparation). Also, the stakeholders might need to acknowledge they harbor different views about what SET knowledge, skills, and dispositions SETs need. This understanding and acceptance leads stakeholders to Stage 3.

Stage 3

Committing to change involves making an explicit choice (Stroh, 2015). After SET faculty and district personnel have established readiness and identified the current realities, they continue moving forward by committing to change. At this stage, the realization of what needs to change to achieve key outcomes occurs when stakeholders acknowledge the costs of the status quo, the costs and benefits associated with changing and not changing, and the solutions and trade-offs needed for both. This stage is often considered a crucial turning point. For example, when SET faculty and district personnel realize their separate attempts, producing short-term results only allow them to cope with the SET workforce crisis, rather than ending it; they may be more likely to commit to a collective approach to change.

Stage 4

Bridging the gap between the undesired and desired outcome(s) takes place when diverse stakeholders move from understanding and affirming to acting (Stroh, 2015). When applied to the SET workforce crisis, stakeholders not only engage in joint recruitment efforts, which target individuals in the workforce pool, but also address the problem of under-preparation through collaborative approaches that offer low-cost certificate/licensure options, employment incentives (increased remuneration), improved working conditions, innovative approaches (e.g., job sharing), and opportunities for SET leadership. Stakeholders also engage in continuous ST improvement by jointly monitoring and adjusting their approaches regularly (e.g., quarterly, rather than annually).

SPECIAL EDUCATION TEACHER PREPARATION: SYSTEMS THINKING IN THE REAL WORLD

In this example, we describe how faculty at the University of Central Florida relaunched a previously discontinued SET preparation program using the four-stage ST process.

Stage 1. Establishing a readiness for change was a foregone conclusion this university faced with a decision of whether to completely discontinue its undergraduate teacher preparation program in 2016, or to focus on resurrecting it. Under-enrollment and lack of faculty led the program faculty to temporarily suspend the program years earlier, and by 2016 the final student graduated. Local school districts were in a crisis with unfilled special education positions, so in response to local need the faculty members committed to focusing on relaunching the program in 2017, with a change-model approach in mind in partnership with several Central Florida local school districts.

Using a popular change model from the field of business, the program coordinator and doctoral students used principles from Kotter's 8 step change model as the framework (Hines et al., 2022). The first step of the model, establishing a sense of urgency, is an obvious need in special education as SET positions are left unfilled by qualified teachers. Communicating this urgency to the College and university provided a way to promote change to existing systems as quickly as possible and cleared the path to building a more accessible and attractive undergraduate program which was key to this successful relaunch.

Stage 2. The "existing realities" to navigate in attempting to implement change began with a close examination of how and why the program was structured in its original form, state requirements impacting program design, and existing college and program area policies that hindered recruitment and retention of students. Some realities hindering recruitment were quickly identified: (a) course scheduling hindered working in schools and taking classes, (b) internship requirements created an economic inequity as some students could not afford

to quit working to fulfill the 40-hour per week requirements, (c) program admission requirements created a bottleneck and frustration for students, and (d) an increasingly online experience threatened the development of collaboration skills critical for teachers.

Given that new SETs with substantial field experiences are significantly more likely to stay (Connelly & Graham, 2009), enhancing these experiences became a cornerstone of the program relaunch. A teaching residency was created with partnering school districts to address the issue of teachers leaving the field due to feeling underprepared for the challenges they experience in the classroom (Headden, 2014). The program allowed students to find (or keep) positions as assistants in special education classrooms to complete two semesters of internship. Rather than creating a "paid internship", the model allows for internships to be layered over the job. Students fulfilled the job requirements of the school's position and completed coursework online or in seminars after work hours. Doctoral scholars were prepared and used a coaching model to support undergraduate students during these internships through weekly online discussions and goal-setting sessions. Changing the practice of clinical experiences and determining modifications that might yield better results was no small task. Gaining "buy-in" from colleagues willing to consider new paths forward was critical to the momentum for change.

Stage 3. Committing to change involved not only commitment from university stakeholders but also community partners. Understanding that School-University partnerships allowed districts to play a direct and productive role in preparing their teachers while allowing them to fill vacancies with teachers who were better prepared, more diverse, and more likely to stay (Guha et al., 2017); thus, the program was committed to strengthening these partnerships. In one large district, for example, a long-standing MOU was changed to include language supporting the completion of university internships while on-the-job as paraprofessionals and teaching assistants. Other local districts followed suit and examined their MOUs with the university to find places to support students interested in the profession.

Another area of examination and change included program admission requirements. At the time the program was relaunched, test requirements were a barrier for students to enter the major. A system was put in place to allow provisional admission and support for test preparation so students could begin coursework rather than facing unnecessary delays. While investigating the need for program changes it was also determined that not all students interested in working with students with disabilities wanted to work in traditional classrooms. A separate track, a partnership with communication disorders, was created for students to work in other settings (Hines et al., 2023).

Stage 4. Bridging the gap between the undesired and desired outcome(s) is occurring at the time of this article is being written. The number of teachers in the program and entering the districts continues to grow but an unintended outcome is that more students are enrolling in the special education major, but not seeking to complete the teaching licensure requirements. Thus, some of the ST that needs to continue lies beyond the teacher preparation program and even the districts involved. The next level of ST that needs to occur involves a need for national, state, and local messaging about the state of teaching and the work conditions for the SET workforce to further impact both the undesired and desired outcomes of this project.

EXPLORING INNOVATIVE WORKFORCE SOLUTIONS TO STRENGTHEN SYSTEMS THINKING

In this section, we provide short summaries of ideas from other fields to offer additional examples of solution-centered, innovative workforce approaches aimed at reducing shortages. The ideas are presented with notations of how they might be employed or have been employed in universities and/or districts. Although these ideas are not yet research-based approaches to SET workforce recruitment, preparation, and retention, they are worth considering and evaluating throughout Stroh's (2015) recommended four-stage ST process.

Supporting Mental Health

Companies such as, LinkedIn, Starbucks, Bumble, and Mozilla provide employees with mental health days (paid or unpaid) to focus on their well-being. The purpose of mental health days is to support employee's productivity and retention by encouraging self-care. LinkedIn found success in providing all employees with one paid week off to enhance mental health and to cope with burnout. Fidelity Investments took a different, preventative approach and extended the time off for holidays by three days. SET preparation program faculty and school district personnel could consider similar health and wellness approaches by offering mental health days (proactively and reactively) that support workforce preparation and retention.

Nurses deal with high levels of loss of life in their work, thus "Death Cafés" have been used as a form of debriefing (Bateman et al., 2020). These cafes used internationally, guide informal discussion on topics of death, loss, secondary trauma, and illness. Healthcare workers, particularly within the ICU reflect on distressing events and develop a sense of

community and support among coworkers to prevent burnout. Similar types of stress cafés could be created to help pre- and in-service SETs talk virtually about challenges with others (e.g., behavior).

In a systematic review, Tolksdorf et al. (2022) found combat fatigue in Intensive Care Units was reduced when employees' work settings promoted higher levels of autonomy, decreased job overload, ensured employee safety, reduced exposure to violence, and decreased working hours. SET preparation program faculty and school district personnel could consider similar approaches for reducing SET fatigue. Some have attempted to do so by providing longer breaks, mindfulness kits, emotional support and breaks after a crisis, or by offering incentives, such as onsite daycare, free car washes, massages, therapy dogs, or even pet daycare. However, little is known about the extent to which these approaches are used and whether they have been studied systematically. We suggest funding to consider interventions that improve working conditions and supports to address SET teacher preparation, retention, and recruitment. Like the "What Works Clearing House," a national database could support the development of a knowledge base and the identification of approaches that could be used within an ST approach.

Matching Needs to Shortages

The vocational rehabilitation (VR) system also faced shortages of qualified rehabilitation professionals (Smith et al., 2020). To address this need, one university implemented a five-year training program with the goal of increasing the skills of VR counselors to effectively meet the needs of persons with disabilities. Unique features of this program included customized employment strategies such as personalizing the employment relationship between job seekers and employers by matching interests or talents. Additionally, the university offered a scholarship opportunity with a service payback requirement which received a high level of successful placement within the field. Smith and colleagues (2020) found that financial incentives, mentorship, networking, and professional learning opportunities paired with careful selection of scholars whose career interests matched the intent of the program led to an increase in the number of students pursuing a master's degree in vocational rehabilitation. This same type of model often is aligned with Office of Special Education Programs 84.325K grants, but how this might be sustained in partnership with district, state, and federal resources is a pathway for SET educators to consider.

Global Application

Outside of education, countries worldwide are taking novel steps to address worker shortages. In Germany, companies facing labor shortages tend to respond with more training for low-skilled workers (Wotschack, 2020). The practice of using 'voice', or incorporating employee training interests or preferences, was found to increase participation in these trainings particularly when organizations have formalized HR practices and structures supporting employee representation (Wotschack, 2020). Meanwhile, in the face of IT shortages, cyber security, and other technology-related fields, the European Union (EU) recommends enterprises to ensure their current technology professionals remain up to date on skills and acquire proper or new certifications to meet the demands of the evolving field (van der Linden et al., 2019). Additionally, the EU recommended embedding industry expertise in courses and having businesses offer certifications or collaborate with others on the development of courses or certifications (van der Linden et al., 2019). How might a similar approach in teacher preparation, through associations like the Council for Exceptional Children, with the Teacher Education Division combined with the Division of International Special Education (and other professional organizations), be used to strengthen ST and address SET recruitment, preparation, and retention shortages globally?

SPOTLIGHT ON SYSTEMS THINKING FOR BOLSTERING RECRUITMENT AND ELEVATING PROFESSIONAL STATUS

SET faculty and school district personnel also may use the ideas offered below as a basis for how ST might be employed to bolster recruitment and elevate professional status. These ideas are intended to be generative and are worth considering and evaluating throughout Stroh's (2015) recommended four-stage ST process.

- Realign and clarify workforce, including rehiring, retooling, recycling, and continued use of those who could or will retire. Finding short-term ways to keep retirees as reading or mathematics coaches or as first year mentors for even one day a week was a successful approach by one large urban district.
- Offer scholarships, in addition to or instead of TEACH grants, to recruit for high-need schools. Universities have coordinated scholarships across organizations into a single database to recruit teachers at the university aligned with getting the district leaders to provide "paid" student teaching internships while others have harnessed foundation and Title 1 funding to provide richer financial support for teachers (Dieker et al., 2021; Scott et al., 2006).
- Employ teams of professionals to create support networks (Wyte-Lake et al., 2013). One university hired clusters of faculty members to address targeted areas of needs instead of the traditional

approach of hiring in a department one at a time.

• Identify "positive" ambassadors to shift workforce recruitment and retention. One district had celebrities talk about their favorite teachers while another had weekly promotions from diverse teachers sharing positive experiences. The current narrative in SET cannot change without directing a new narrative.

• Increase economic support. Some districts are offering signing bonuses for schools with extreme and persistent shortages. A master's cohort in these same sites are using Title 1, scholarship, and endowment funds to ensure SETs move up the pay scale, with efforts to create a strong cohort of leaders in these schools. From the over 100 teacher leaders funded to date, over 75 remained in the same schools and placements 5 years later (Dieker et al., 2021). Offer apprenticeships and ensure the new employees have the most enticing jobs (Kolding et al., 2018), or encourage paid internships. In the previous real world example illustrating Stroh's recommended four stage ST approach in SET preparation, the ST team led by Hines and colleagues (2022) at the large urban university increased undergraduate enrollment from 0 to 100 in a year.

CONCLUSIONS

Special education teacher shortages continue to be chronic and pervasive, interfering with the provision of a free and appropriate education to students with disabilities (National Academies of Sciences, Engineering, and Medicine, 2020). We realize fully this longstanding problem will not be remedied quickly. However, we believe the collective power of key stakeholders in special education, policy, leadership, and practice can come together in unprecedented ways to no longer talk about shortages but to turn work towards producing timely, innovative workforce research and solutions. Toward this end, we encourage stakeholders to explore what a ST framework offers and how it might inform a new research agenda centered on interventions to improve teacher recruitment, preparation, retention, and effectiveness. The special education workforce and the students with disabilities and families they serve deserve no less.

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An Undergraduate Program to Address the Teacher Shortage: What We Thought We Knew

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Journal of Special Education Preparation
3(1), 18-32

DOI: 10.33043/JOSEP.3.1.18-32
openjournals.bsu.edu/JOSEP

ABSTRACT

After more than 20 years of a critical shortage in special education teachers, this mid-Atlantic state expedited program development for undergraduate-level teacher preparation programs. To meet the accelerated timeline, one program at a large public university used its graduate-level coursework as a model for the undergraduate level program. After initial implementation, it was clear that revisions were necessary. In this article, we provide a description of the program revision activities conducted, including (a) building a representative advisory board, (b) conducting a needs assessment, (c) developing a coherent curriculum map, (d) creating an action plan and implementing reforms, and (e) reviewing ongoing activities for continuous improvement. Implications are described, including how special education teacher preparation programs can use the CEEDAR Center Roadmap to Educator Preparation Reform to guide data-based program revisions, conduct a Q-Sort Activity as a systematic way to identify program priorities, and engage in program review activities, ultimately to better prepare special educators and reduce the teacher shortage.

KEYWORDS

Adult learning theory, CEEDAR Center, program revision, special education preparation

Traditional teacher preparation programs are pulled in a variety of directions as they attempt to navigate both political and professional waters in the development and maintenance of their programs. This tension is particularly acute in special education teacher preparation programs. For example, according to Hawkins (2022), between 1998 and 2018, 80% of states reported shortages in special education teachers. To address these shortages, many states have allowed alternative routes to licensure, such as providing provisional licenses to allow for full-time teaching while completing the requisite coursework (Peyton et al., 2021; Whitford et al., 2018). At the same time, standards of accreditation have been revised (Council for Accreditation of Education Preparation, n.d.) and there are an increasing number of calls for attention to coherence in programs (e.g., Cavanna et al., 2021; Floden et al., 2021). This coherence is "a process in which all courses within a program are aligned in terms of content and build sequentially on one another based on a clear vision of good teaching" (Cavanna et al., 2021, p. 28). In this manuscript, we describe how one special education program attempted to address these pressure points of the teacher shortage and program coherence while developing a new undergraduate program in special education. We detail the fast-tracked political process for state approval of the programs. Then, we provide a detailed description of how we used the CEEDAR Center Roadmap for Educator Preparation Reform framework (CEEDAR Center, 2020) to engage stakeholders, complete a needs assessment, and conduct a program review for our newly developed program. We conclude by describing implications relevant to program development and refinement.

A Call for Undergraduate Programs

Following the 1990 meeting of governors and consideration of *A Nation at Risk* (U.S. National Commission on Excellence in Education, 1983), the General Assembly in a mid-Atlantic state passed legislation and created regulations that required all teachers to have a bachelor's degree in a subject other than education before they could obtain initial licensure by way of a master's degree or an alternative route (Coy, 2017). This legislation, and the requisite regulations, were further reinforced by No Child Left Behind (NCLB, 2002) and the requirement for being highly qualified. To that end, virtually all Schools of Education in the state were graduate schools, providing initial licensure coursework through Master of Education, Master of Teaching, or Master of Arts in Teaching degrees in both traditional preservice preparation programs and in alternative pathways. Even with a combination of traditional and alternative routes to licensure, the state has faced an increasing teacher shortage, particularly in the areas of special education, elementary education, and mathematics. For example, in an annual report on the Condition of Education, the state's Board of Education noted 1,063 teacher vacancies in the 2019-2020 academic year, up from 440 in the 2010-2011 year (Scudder, 2022). More specifically, in analysis provided by the state's Department of Education, special education has been listed as either the top or near the top critical shortage area from 2003-2004 (the start of reporting) to the present. The shortage of special education teachers in this state has persisted since the pandemic, with the state Staffing and Vacancy Report (Virginia Department of Education, 2022) showing over 650 and 735 special education position vacancies on October 1 of the 2021-22 and 2022-23 academic years, respectively. This chronic need for teachers, particularly in special education, caused state leaders to reconsider having graduate level-only initial licensure programs.

The Sprint

In 2016, the Task Force for Diversifying the State's Educator Pipeline, and in 2017, the Advisory Committee on Teacher Shortages recommended that the state change regulations to allow initial teacher licensure at the undergraduate level. The then-Governor directed the Board of Education to "initiate emergency regulations creating an option for [the state's] public colleges and universities to offer an undergraduate program with a major in education" (Coy, 2017). The General Assembly passed legislation to amend the then-current code to allow for these undergraduate degrees in education. In fall of 2018, the next governor called for an accelerated pace to launch these programs. This accelerated pace allowed for any proposed university undergraduate initial licensure program submitted by April 1, 2019 to the State Council for Higher Education (SCHEV) to expect approval (if guidelines were met) by May 2019. The typical timeline for this approval process is three years.

Four Undergraduate Programs

One graduate level special education program in the College of Education and Human Development of a large state public university undertook the rapid development of undergraduate program proposals to meet the Governor's call. The result was four proposed programs (i.e., one degree proposal with four concentrations) for undergraduates in special education that were approved by SCHEV on May 14, 2019, the Board of Education on June 20, 2019, and launched in the fall 2019 semester. These included three initial licensure programs (K-12 students with disabilities who access the general curriculum, K-12 students with disabilities who access the adapted curriculum, PK-12 students who are blind/visually impaired) and one non-licensure program. Table 1 lists coursework in the students with disabilities who access the general curriculum program. Within the coursework, students have (a) three courses with field experience components within them tied to course assignments; (b) a sequence of three field experience courses designed to increase in time (i.e., 20-40 hours) and responsibilities (i.e., observational to supporting the Mentor Teacher to beginning independent teaching) across the program; and (c) a semester-long internship with back-to-back elementary and secondary internship placements. Because of the short timeframe for development, many of these courses and field experiences were the undergraduate equivalent of graduate level courses and field experiences that were already in place, including similar learning objectives and similar assignments. Yet, evidence indicates that undergraduate students require different approaches to learning (e.g., Yun & Park, 2020), and this became increasingly apparent as faculty began teaching the proposed courses. Additionally, the accelerated pace of program development resulted in delegated tasks and small working groups, resulting in faculty writing syllabi in an isolated fashion. The outcome was a program that had not been thoroughly mapped for how content is introduced and reinforced across courses to meet the needs of undergraduate learners. As faculty began to teach courses, they noticed a lack of understanding of how each course

contributed to the larger outcomes of the overall program, highlighting the lack of program coherence. Our program review and revision began in Spring 2020 and has continued to the present. In the summers of 2020-22, the authors received internal funding to complete additional program review specific to the students who access the general curriculum licensure program (hereafter: general curriculum program). The goal was to develop a coherent and scaffolded program that would produce undergraduate teacher candidates who would be successful novice special education teachers for students with disabilities who access the general curriculum.

TABLE 1: Courses in Undergraduate Program for Special Education for K-12 Students with Disabilities who Access the General Curriculum

Course Number	Course Title	Credit Hours
	Core Requirements – All Special Education undergraduate programs	
ED 302	Human Growth and Development	3
ED 201	Introduction to Special Education	3
ED 251	Classroom Management and Positive Behavior Supports	3
ED 351	Technology Integration for Specialized Instruction	3
ED 352	Assessment	3
ED 353	Individualized Behavior Supports	3
ED 354	Consultation and Collaboration	3
ED 381	Exploratory Field Experience	3
ED 451	Transition and Self-determination	3
ED 452	Intersectionality and Disability	3
ED 482	Internship	12
	Concentration Requirements – General Curriculum licensure program only	
ED 241	Characteristics of Students with Disabilities who Access the General Curriculum	3
ED 341	Language Acquisition and Reading Development	3
ED 441	Instructional Strategies for Reading and Writing	3
ED 443	Instructional Strategies for Math	3
ED 445	Clinical Practice and Seminar 1	2
ED 446	Clinical Practice and Seminar 2	2

Division Description

The Division of Special Education in the School of Education at this institution includes 11 tenured or tenure-track faculty, 15 term or clinical faculty, and approximately 42 adjunct faculty per semester. The Division includes three graduate-level initial licensure programs, seven certificate programs, three undergraduate initial licensure programs, and one undergraduate non-licensure program. On average, the Division has approximately 750 graduate students enrolled and delivers approximately 100 graduate-level courses per semester. In fall 2019, we began with two undergraduates officially enrolled in the BSED program. As of fall 2022, 57 undergraduates were officially enrolled in the BSED program.

Conceptual Framework

Our work was guided by two conceptual frameworks: program coherence and adult learning theory. First, program coherence, including both structural and conceptual, guided our thinking related to vision, coursework, and fieldwork. According to Tatto (1996), coherence is how the central ideas of teaching and learning are shared by all those involved in teacher education and how all the learning activities and opportunities are integrated to reach program goals. The goal of coherence in a program is not consistency in message; rather, it is the way in which coursework and fieldwork connect to central concepts and ideas that are foundational to the goals of a program. Critical to coherence is a clear program vision and a buy-in of all those involved in program implementation, including faculty, school personnel, and supervisors. This vision and the specific ideas behind it are meant to guide all choices of coursework, fieldwork, learning activities, and knowledge and skill focus with a scaffolded approach to teacher development across the course of the program and into induction. This deliberate connection between theory and practice, as well as university and schools, reflects the idea of both structural and conceptual coherence (Grossman et al., 1999; Hammerness, 2006). Programs that are more coherent tend

TABLE 2: CEEDAR Center Roadmap for Educator Preparation Reform Framework

Step	Description	Our Institution Actions
1. Engage key leaders	• Establish a steering committee • Generate support and buy in • Communicate a vision for reform	• Two faculty identified to lead efforts • Funding and graduate research assistant support secured
2. Facilitate a needs assessment	• Examine multiple sources of data • Engage external stakeholders • Gather faculty input • Leverage current initiatives	• Near replication of Sayeski & Higgins (2014) Q Sort • Included program faculty and external stakeholders
3. Determine program review focus	• Decide instructional focus of review • Select individual programs or courses for review • Create a workgroup to conduct the review	• Identified undergraduate general curriculum focus • Recruited workgroups for program review • Established all day retreat agenda to review
4. Review programs	• Choose program review tools • Establish program review process • Analyze program review data	• Used results of Q Sort for priority and essential items review • Conducted retreats for review process
5. Develop action plan	• Identify action steps for program improvement • Secure resources to support program improvement • Specify outputs and outcomes • Develop progress monitoring and data collection plan	• Conducted review process of core courses with other program faculty • Specified outcomes for implementation • Began action plan process
6. Implement reforms	• Address implementation opportunities and challenges • Develop faculty capacity	• Established undergraduate faculty discussion group • Established general curriculum teaching discussion group
7. Practice continuous improvement	• Collect and analyze data • Make program adjustments as needed	• Ongoing activities
8. Scale impact	• Communicate achievements • Scale efforts	• Ongoing activities

to produce teacher candidates who feel more efficacious and committed to the profession (Cavanna et al., 2021).

Adult learning theory guided our work in developing learning experiences. Acknowledging that adults learn differently from children is key to developing appropriate learning experiences. Specifically, we followed the theory described by Taylor and Hamdy (2013), an iterative model of learning from medical education. Within this model, adult learning begins when an adult is asked to complete a task that causes dissonance in their current level of knowledge, experience, or beliefs. This dissonance requires the candidate to reflect and observe the task from a different perspective. The candidate uses this different perspective to develop new concepts, experiment with new ways to accomplish the task, fail or succeed, and then consolidate the new learning into their existing knowledge. Critical to all aspects of this learning is the feedback provided by peers and experts (Taylor & Hamdy, 2013). This cycle is iterative in that changes in context, new learning, further

experience, and belief in the process impact the development of cognitive strategies to face the dissonance and embrace nuances and refinement in learning. Scaffolded support and feedback within this model are critical for persistence and retention. In other words, tasks must challenge candidates but cannot be too difficult, and feedback must be supportive and productive (Taylor & Hamdy, 2013).

USING THE CEEDAR CENTER ROADMAP

Given these two conceptual frameworks, the authors identified the CEEDAR Center *Roadmap for Educator Preparation Reform* (CEEDAR Center, 2020) as a guide for systematic activities of program review. The Roadmap is a planning framework for educator preparation programs to use when reforming a program. The CEEDAR Center created the Roadmap based on guidance from a review of 72 institutions of higher education who received 325T grants funded across a five-year period by the U.S. Department of Education Office of Special Education Programs (OSEP) to restructure and improve special education teacher preparation programs (CEEDAR Center, 2020; Sobel et al., 2014). While the Roadmap was intended to help programs integrate high-leverage and evidence-based practices into coursework and fieldwork through ongoing and collaborative analysis, the guidelines can be used in a variety of ways to engage in program reform. For example, although the Roadmap includes many examples of how state-level education agencies have used the framework, it also explains that other stakeholders, including deans, program chairs, or program leaders, may use this roadmap to guide reform processes, including at the program level (CEEDAR Center, 2020). Thus, not only is the Roadmap grounded in recommendations from the extensive OSEP-funded work around reform in special education teacher preparation, but it provides a systematic framework for reform that can be applied in different ways. See Table 2 for a list and description of the review steps suggested by the Roadmap. Faculty representatives completed each step of the Roadmap, starting in Spring 2020, though work on implementing reforms (step 6) and continuous improvement (step 7) is ongoing. Below we describe our actions in each step of the Roadmap towards building a coherent program to meet the needs of undergraduate teacher candidates.

Step 1: Engage Key Leaders

Given the rapid development of the undergraduate program and the overlap of faculty teaching in both undergraduate and graduate courses, program leaders anticipated the need for program review early into implementation. Because of this, the third author provided support and assistance to the first two authors to begin a program review with other interested faculty after the first semester of implementation. This occurred following an advisory board meeting for the graduate program in which local school administrators expressed excitement about the new undergraduate program.

Step 2: Needs Assessment

To begin the program review, the authors identified Q Methodology, as used by Sayeski and Higgins (2014), as a viable option for conducting a needs assessment. Q Methodology was originally developed by William Stephenson in the 1930s (Brown, 1993) as an attempt to combine qualitative and quantitative methods to "bring a scientific framework to bear on the elusiveness of subjectivity" (Coogan & Herrington, 2011, p. 24). The idea is to allow an individual to communicate his or her perspective about a topic in order for it to be examined and compared to others. In Q Methodology, representative statements are taken from a body of ideas around a topic, which can be from literature, interviews, videos, experts, and the like (Brown, 1993). Participants then organize these statements based on specific factors such as agree/disagree, important/unimportant. This activity is called a Q Sort (Coogan & Herrington, 2011) and is when "respondents compare each [statement] to each of the others and arrive at a true comparative judgment on where to place each item" (Thomas & Watson, 2002, p. 142). The outcomes of the Q Sort can then be analyzed, with an overall aim to "consider data in terms of the individual's whole pattern of responses" (Coogan & Herrington, 2011, p. 24).

Developing and Disseminating the Q Sort

Similar to Sayeski and Higgins (2014), we developed the Q Sort statements using CEC's (2012) Initial Specialty Set: Individualized General Curriculum, which contains 92 items that reflect knowledge and skills within the seven CEC standards that teacher candidates must be able to demonstrate for teaching students with disabilities who access the general curriculum. Given that Q Sort techniques should include 30-60 items (Thomas & Watson, 2002), we reviewed the CEC specialty set items to reduce and/or combine like items. For example, we eliminated items that were medically focused (e.g., types and transmission routes of infection disease) and items that overlapped with another standard, and we edited items to create consistent wording across items (e.g.,

FIGURE 1: Q Sort Directions and Sample Statements

Q Sort Directions
Sort the items into one of the following knowledge categories indicating the level of knowledge you believe graduates from our program should possess upon completion of our undergraduate special education program. 1. Below there are 55 items in a randomly ordered list on the left. Read through the list and become familiar with all of the items. Please note that students with disabilities (SWD) refers to students with high-incidence disabilities of LD, EBD, ADHD, ID, and autism, who are accessing the general curriculum. 2. Then, sort the items into one of 5 categories, indicating the level of knowledge for that item that you believe graduates from our program should possess upon completion of our undergraduate special education program. To sort the items, click on the item and drag it to the category box. Please note that there is no priority to the order of items within a category box, and you can move items from one category box to another as needed. You are limited to a specified number of items per category: **Mastery** (i.e., candidate applies the skill with ease and/or could teach others the concept; 7 items), **Application** (i.e., candidate could apply the skill in practice and/or has a strong grasp of the knowledge; 12 items), **Theoretical** (i.e., candidate could pass an exam question related to this concept; 17 items), **Superficial** (i.e., candidate would have passing knowledge of this concept and may know where to go for more information; 12 items), and **Limited** (i.e., content may be included in a course but not tested on an exam or a part of a course assignment/field experience expectation; 7 items). 3. After the sort, you will find an additional 5 blank items. If you think of a topic that is not covered on this list, but you believe is a "big idea" or important topic in special education, write your topic in one of the 5 blank items. 4. Once you have finished sorting the items, you will be asked to complete one demographic item.
Q Sort Statements
1. Candidate can identify barriers to accessibility of SWD in school environments and curricula
2. Candidate can articulate major laws and policies regarding referral and placement procedures for SWD
3. Candidate can state definitions and describe issues related to the identification of SWD
4. Candidate can identify and describe critical historical foundations, classic studies, major contributors, major legislation, and current issues related to SWD
5. Candidate can explain the continuum of placement and services available for SWD and least restrictive environment
6. Candidate can identify and provide consultation on effective prevention and intervention strategies within multi-tiered systems of supports
7. Candidate can establish a consistent classroom routine in a variety of educational settings
8. Candidate can use a variety of effective procedures for progress monitoring both appropriate and problematic social behaviors of SWD

observable and measurable action words, consistent terminology use). The first two authors discussed edits and came to agreement on a list of 72 statements.

The statements were then disseminated to three experts in the field for review; all three reviewers were at other institutions and had expertise in teacher preparation research, program development, and special education for students with disabilities who access the general curriculum. The experts were asked to (a) review a spreadsheet of the Q statements and identify whether each item should be kept, revised, or deleted; (b) respond to an open-ended question about any

items missing from the statements; (c) complete the Q Sort activity online in Qualtrics (which allowed participants to drag and sort the statements through an online survey); (d) rate the clarity of the Q Sort activity and the ease of completing it in Qualtrics, using a 5-point Likert scale; and (e) describe any suggested changes regarding the delivery format via Qualtrics. Feedback was returned from two of the three experts; feedback was solicited during April 2020 when the COVID-19 pandemic was beginning, and the third expert was unable to provide written feedback.

The first and second author then met to discuss feedback from the expert reviewers and make changes accordingly. Based on the expert reviewer input, we kept the online delivery using Qualtrics, revised items for clarity, and eliminated redundant items by deleting or combining items. Of the draft statements, we kept original wording for 26 items, deleted 29 items, revised 17 items, and added 12 new items. The final Q Sort activity, therefore, had 55 items that participants were asked to sort into five categories. Figure 1 includes ecxamples of the 55 Q Sort activity items.

The final 55 Q Sort items were disseminated through a Qualtrics survey, using the "Pick, Group, and Rank" question type. Following procedures used by Sayeski and Higgins (2014), respondents were asked to sort the items into five scaled categories: (a) Mastery Knowledge (i.e., candidate applies the skill with ease and/or could teach others the concept); (b) Application Knowledge (i.e., candidate could apply the skill in practice and/or has a strong grasp of the knowledge); (c) Theoretical Knowledge (i.e., candidate could pass an exam question related to this concept); (d) Superficial Knowledge (i.e., candidate would have passing knowledge of this concept and may know where to go for more information); and (e) Limited Knowledge (i.e., content may be included in a course but may not be tested on an exam or as part of a course assignment/field experience expectation). As with Sayeski and Higgins's (2014) study, we used a quasi-normal distribution for the number of items respondents could sort into each category, which forced respondents to prioritize items in the scaled categories at the extremes, allowing us to examine which items respondents prioritized for program outcomes. Respondents were limited in the number of items they could place in each category: 7 items in Mastery Knowledge, 12 items in Application Knowledge, 17 items in Theoretical Knowledge, 12 items in Superficial Knowledge, and 7 items in Limited Knowledge. See Figure 1 for the directions included in the Q Sort activity.

In addition to sorting the 55 items into five scaled categories, respondents were provided with five blank open-ended items in which they could add topics that were not included in the Q Sort activity but that they believed were important topics in special education. For each blank item, respondents could then indicate which knowledge level they would assign that item. The final item of the survey was an open-ended item for respondents to provide any additional feedback regarding knowledge and skills that they believe teacher candidates should possess upon completion of the program.

After receiving IRB exemption, we disseminated the Q Sort activity invitation via email to 15 internal stakeholders (i.e., faculty members actively teaching in the general curriculum program) and 18 external stakeholders (i.e., district administrators and school administrators); external stakeholders were invited to share the activity with special education teachers at their schools. All stakeholders were given four weeks to complete the Q Sort in Qualtrics, with three weekly email reminders sent. Of the 15 faculty members, 14 participated for a 93.3% response rate. One faculty member partially completed the Q Sort and asked that their responses not be included because of challenges with the electronic format. Of the 18 external stakeholders, six participated (five school administrators and one school district administrator), for a 33.3% response rate of invited external stakeholders. Since external stakeholders could forward the Q Sort to special educators, we do not know how many others received it, limiting our ability to identify the total response rate. Overall, there were 20 participants who completed the Q Sort activity, and all responses were anonymous.

Q Sort Results

The Q Sort was implemented to determine the knowledge and skill priorities of faculty and stakeholders for teacher candidates in our program, as Step 2 (Facilitate a needs assessment) of the CEEDAR Center Roadmap. To analyze the Q Sort data, we followed procedures used by Sayeski and Higgins (2014). Specifically, results of the Q Sort activity identified two categories of statements to be used to guide curricular priorities and programmatic coherence: Priority Items and Essential Items. We first determined the program Priority Items as those items rated by most (70% or more) respondents as Mastery or Applied (i.e., the top two categories in the sort). We then determined program Essential Items as the items rated by most (70% or more) respondents as Mastery, Applied, or Theoretical (i.e., the top

TABLE 3: Q Sort Essential and Priority Items

Priority Items: Candidate can...

- establish a consistent classroom routine in a variety of educational settings.
- make instructional changes to general curricula and lessons to make them accessible for SWD
- plan, conduct, and interpret formal and informal methods of progress monitoring
- use a variety of effective, non-aversive techniques to change targeted behavior and to maintain attention of SWD
- identify, plan, and implement effective practices for specialized instruction in comprehension and monitoring strategies
- effectively use error analysis to guide instructional decisions and provide feedback to learners
- effectively plan and implement all components of explicit instruction

Essential Items: Candidate can...

- describe defining characteristics of SWD who access the general curriculum
- identify ways to adapt the physical environment to provide optimal learning opportunities for SWD
- use a variety of effective procedures for progress monitoring both appropriate and problematic social behaviors of SWD
- define and correctly use specialized terminology from assessment of SWD
- make instructional and placement decisions based on data
- explain the continuum of placement and services available for SWD and least restrictive environment
- practice ethical responsibility to advocate for appropriate services for SWD
- describe and implement the collaborative and consultative roles of the special education teacher
- implement effective co-planning and co-teaching methods to strengthen content acquisition by SWD
- identify and provide consultation on effective prevention and intervention strategies within multi-tiered systems of supports
- devise, plan, and implement individualized reinforcement systems and environmental modifications to address all levels of behavior intensity
- identify, plan, and implement effective practices for:
    1. specialized instruction in phonics
    2. specialized instruction in phonemic awareness
    3. specialized instruction in fluency
    4. specialized instruction in math computation and fluency
    5. specialized instruction in math problem solving
    6. specialized instruction in mathematical reasoning
    7. specialized instruction in organizing and composing written products
    8. specialized instruction in written language
- effectively identify and teach learning strategies and study skills to enhance acquisition of academic content
- identify and implement research-supported methods for content- area instruction of SWD
- identify reliable sources of specialized materials, curricula, and resources for SWD
- identify and use appropriate technologies in instruction

three categories in the sort). Items that had already been identified as Priority Items were removed from the list of Essential Items. Finally, we reviewed the open-ended responses in the Q Sort and determined that all topics respondents provided were related to one or more of the 55 Q Sort activity statements, so none of the topics entered as open-ended items were included in the results.

Priority items. We identified seven statements as Priority Items (i.e., those items ranked by 70% or more of respondents as Mastery or Applied, the top two categories). As shown in Table 3, these seven statements were focused in the areas of specialized instruction, instructional change, behavior, and progress monitoring, and they included statements from the 2012 CEC Standards 2 (Learning Environments), 3 (Curricular Content Knowledge), 4 (Assessment), and 5 (Instructional Planning and Strategies). Specifically, for CEC Standard 2 (Learning Environments), priority items included *establishing a consistent classroom routine in a variety of educational settings* and *using a variety of effective, non-aversive techniques to change behavior and maintain student attention*. The priority item aligned with CEC Standard 3 (Curricular Content Knowledge) included *making instructional changes to general curricula to make content accessible for students with disabilities*. The priority items *planning, conducting, and interpreting formal and informal methods of progress monitoring* and *effectively using error analysis to guide instructional decisions and provide feedback to learners* aligned with CEC Standard 4 (Assessment). The last two priority items related to CEC Standard 5 (Instructional Planning and Strategies) were *identifying, planning, and implementing effective practices for specialized instruction in comprehension and monitoring strategies* and *effectively planning and implementing all components of explicit instruction.*

Essential items. We identified 23 statements as Essential Items (i.e., those items ranked by 70% or more of respondents as Mastery, Applied, or Theoretical, the top three categories, after removing the Priority Items). As shown in Table 3, these 23 items crossed all seven 2012 CEC standards, although the bulk of the statements were included in the 2012 CEC Standard 5 (Instructional Planning and Strategies). For example, eight essential items targeted specialized instruction in reading, math, and writing, two essential items emphasized effective strategies for content area instruction, and two essential items targeted technology use and specialized materials and curricula. The remaining 11 essential items covered a variety of skills across the other 2012 CEC standards, such as using co-planning and co-teaching, progress monitoring for social behaviors, practicing ethical responsibility in advocacy for students with disabilities, using reinforcement systems and environmental modifications to address a variety of behavioral intensities, and consulting with others on prevention and intervention strategies within multitiered systems of support (see Table 3 for the full list of Essential Items).

Overall, the Q Sort resulted in a list of the knowledge and skills that program stakeholders identified as critical outcomes for our undergraduate teacher candidates, categorized by Priority Items and Essential Items. The Q Sort, therefore, was well aligned to the CEEDAR Center Roadmap's Step 2 of conducting a needs assessment, as it provided a systematic, data-based way for us to identify program needs.

Step 3: Determine Program Review Focus

After the Q Sort was complete, we moved to Steps 3 of the Roadmap to determine the focus of the program review. We used the Q Sort results as the instructional focus of our review, since these were prioritized items aligned with the CEC standards. We then selected the program courses to include in the review. Specifically, the program review focus and activities included the undergraduate general curriculum program and associated general curriculum program-specific courses (see Table 1). The program review also included core courses that were required in all four undergraduate special education programs (i.e., the general curriculum program, two other licensure programs, and a non-licensure program). These core courses included Introduction to Special Education, Assessment, Collaboration and Consultation, Technology Integration, Classroom Management, Individual Behavior Supports, Transition, and Intersectionality.

Step 4: Review Programs

Once we had determined the program review focus, we planned a series of activities with targeted groups of faculty members to conduct the program review. First, we led a program review activity with a small group of faculty members who had expertise in the General Curriculum program. Next, we conducted the program review that was broadened to focus on the program core courses required in all four undergraduate special education programs; thus, faculty in this second group included program coordinators and faculty members from the other undergraduate licensure and non-licensure programs. Finally, we conducted program review activities with the full instructional faculty in our institution's Special Education division. In the sections below, we describe each of these working groups and their associated program review

TABLE 4: Sample of Curriculum Map for Selected Q Sort Statements

		Characteristics Course	
		Addressed (x or blank)	Knowledge Level (M, A, T, S, L)
CEC Initial Preparation Standards			
1. Learner development and individual learning differences			
Q54.	Candidate can describe defining characteristics of SWD who access the general curriculum	X	T, A
2. Learning environments			
Q7.	Candidate can establish a consistent classroom routine in a variety of educational settings		
Q11.	Candidate can identify ways to adapt the physical environment to provide optimal learning opportunities for SWD	X	T
3. Curricular content knowledge			
Q26.	Candidate can make instructional changes to general curricula and lessons to make them accessible for SWD	X	L
4. Assessment			
Q8.	Candidate can use a variety of effective procedures for progress monitoring both appropriate and problematic social behaviors of SWD	X	S
Q32.	Candidate can define and correctly use specialized terminology from assessment of SWD (e.g., types of scoring, types of tests)		
Q34.	Candidate can plan, conduct, and interpret formal and informal methods of progress monitoring	X	L
Q35.	Candidate can make instructional and placement decisions based on data	X	L

Note. M=mastery; A=application; T=theoretical; S=superficial; L=limited; SWD=students with disabilities

activities in detail.

General Curriculum Program Workgroup Retreat

To conduct program review activities specific to the general curriculum program and associated courses, the program coordinator identified two faculty who had experience teaching undergraduate students to participate with the first two authors and the program coordinator in a workgroup to review courses in the general curriculum program. After securing their agreement to participate in the project, we provided them with a list and description of the priority and essential items identified through the Q-Sort activity. In addition, we provided them with all the general curriculum course syllabi that had been included in the original program approval package. We asked that they read through these documents and be ready to discuss them in our retreat. In the all-day virtual retreat, all five members of the workgroup went through each syllabus to identify which essential items were ad-

dressed and/or should be addressed in each course of the program, including core courses. For each item, the group also identified the level of knowledge at which the essential or priority item would be addressed. This included superficial, limited, theoretical, application, and mastery. The group discussed each item across all courses. When there was disagreement, we discussed as a group until we reached consensus. In this way, the workgroup created a recommended curriculum map for both general curriculum courses and for core courses based on the Q-Sort statements. The workgroup also drafted a mission statement for the program, to be presented to the full faculty in the upcoming academic year, as well as a series of suggestions for additional action. These action steps included: (a) revising all syllabi as described by the group and having them approved by the curriculum committee, (b) developing a revised assessment plan, (c) creating course materials (e.g., case studies) related to the revised outcomes to support faculty, and (d) establishing a continuing undergraduate professional learning community for faculty.

Cross Program Workgroup Retreat

Following the program workgroup retreat, we scheduled a cross program workgroup retreat that included the first two authors and program coordinators for all three undergraduate licensure programs. We introduced the results of our Q-sort activity, identified the essential and priority items, and described the program workgroup decisions on these items for the core courses. The group discussed the preliminary curriculum map for each of these courses until consensus was achieved. This resulted in a complete curriculum map for essential and priority items and the associated level of learning expectation across all courses in the general curriculum program, including core courses. Table 4 includes a sample of the curriculum map developed for a general curriculum program-specific characteristics course. Similar to the general curriculum program workgroup, the cross-program workgroup identified future actions including (a) conducting cross-program assessment mapping in core courses; (b) developing materials to support core courses (e.g., case studies, lesson plan template) and internship courses (e.g., observation protocols); (c) using available resources (e.g., doctoral student involvement, faculty group meetings); and (d) creating an organizational system for material dissemination.

Faculty Report

Following the workgroup retreats, we presented the Q-study process, resulting essential and priority items, and curriculum matrix to the broader faculty during an instructional faculty meeting. After review, the faculty affirmed the items and matrix. In this same meeting, the authors facilitated a group process to review and discuss program mission and vision statements. Following this meeting, with the direction of the essential and priority items as well as the mission statement, the authors proceeded with syllabi revisions to match the curriculum map.

Step 5: Action Plan Steps

Given the outcomes of the Q Sort and faculty workgroups, specific action plan steps were developed during Step 5 of the Roadmap. These included: (a) developing faculty supports, (b) conducting an additional review for culturally responsive practices, (c) revising the monitoring and data collection plan, and (d) making course revisions. In addition, division administration agreed to add an academic program coordinator for the core undergraduate program, providing a point person for conducting program review, evaluating program outcomes, and establishing program policies and procedures.

Step 6: Implement reforms

After creating the initial action plan steps, we initiated Step 6 of the Roadmap through implementing reforms. Two consistent recommendations of the workgroups were implemented immediately to support and communicate curriculum coherence to instructional faculty, particularly adjunct faculty: (a) to develop materials for instructors of the revised courses, and (b) to establish faculty groups.

Development of Materials

Figure 2 includes the outline of a course "cheat sheet" developed for distribution to instructional faculty. In this sheet, essential and priority items as well as learner outcomes and CEC standards (2012) are identified and highlighted. Readings and suggested activities are also included. Assessment materials and descriptions are provided as well as other teaching suggestions. These sheets are housed on a shared drive with other course materials that are provided by previous instructors. These materials include PowerPoint presentations, in-class activity descriptions, and student case studies.

Faculty Groups

The authors established two voluntary faculty groups for those interested in teaching undergraduate students. The first group includes faculty from across programs who are interested in or who have taught undergraduate

FIGURE 2: Course Cheat Sheet Template (Characteristics Course)

Course Number	
Course Title	Characteristics of students who access the general curriculum
Course Lead	
Core or Program	

Prerequisites
None

Course Priority Items*

Course Essential Items*

Learner Outcomes and CEC Standards

Readings
Required Textbook(s)
Suggested Readings

Assessments/Major Assignments

Suggested Ideas/Activities

Related Resources

courses and it meets two to three times per semester. The group has met once to brainstorm how to increase undergraduate engagement in professional organizations and how to address critical dispositions for teaching in courses. The second faculty group meets monthly and includes current instructors in the general curriculum program. The first meeting focused on sharing strategies for student engagement, strategies for using technology, and highlights of successful activities. Additional meetings across semesters allowed faculty to share challenges of teaching undergraduate vs. graduate students, including necessity for repetition of instructions for assignments, dispositional issues, and making the student-to-teacher mindset shift. The result of these discussions has been the development of an undergraduate candidate handbook that includes the policies, procedures, and expectations of our specific program.

Step 7: Practice Continuous Improvement and Step 8: Scale Impact

After the initial action steps and reforms had been implemented, we engaged in the last two steps of the CEEDAR Center Roadmap to practice continuous improvement and scale the impact. These two steps are ongoing and will likely continue to be ongoing as we collect data on the outcomes of program reform and as we identify new needs within the program. For example, to practice continuous improvement, we have implemented a data collection process to help inform program adjustments. Data collection includes performance-based assessment data collected on key assignments in identified courses; student and instructor surveys to gather perceptions of the program's coherence, strengths, and needs; and informal feedback collected at regular faculty group meetings. Additionally, information gathered from the faculty groups established in Step 6 has identified areas in which we need to better support our teacher candidates and has highlighted additional sources of data required to monitor progress. For example, we are in the process of creating systematic ways to monitor students' grades and overall GPA, students' passing rates and number of attempts on state licensure exams, and data on students' professional dispositions. At the same time, we are also devising program policies and support

procedures for students who need additional help throughout the program. Licensure program coordinators meet regularly to review data and identify areas of strength and need around program coherence and student outcomes. The result of this process is an ongoing cycle of program review to ensure reform efforts are initiated, sustained, or adjusted accordingly.

As an example of continuous improvement, feedback and data from both instructors and students identified a new area of need around the clinical practice components of the program. Specifically, we identified that teacher candidates had gaps in knowledge learned in coursework and applying skills in fieldwork. Additionally, we found areas of need around scaffolded learning within courses, such as where lesson planning is introduced, reinforced, and applied within fieldwork. We have been exploring ways to address these gaps by identifying ways to increase practice-based learning opportunities across all courses (e.g., case studies, tutoring, lesson study) and mapping these opportunities across the program for a systematic, structured approach. While this part of our reform efforts is ongoing, it highlights how Step 7 of the Roadmap can be used to continue program adjustments and stay responsive to data-identified areas of need.

Although in its initial stages, we have begun efforts towards Step 8 to scale impact. One way we have done this is through disseminating our process and findings to both program stakeholders (e.g., advisory boards, faculty members) and more broadly to other programs and institutions through professional conferences. We have also obtained internal funding within the college to collaborate with other programs who have new undergraduate teacher licensure programs (e.g., elementary education). The intent of this collaborative project is to gather data on shared undergraduate teacher candidate needs across licensure areas and to pool resources to meet those needs.

DISCUSSION AND IMPLICATIONS

Across a student's experience in P-12 schools, the quality of teachers matters more to student achievement than any other school-based factor (Chetty et al., 2012; Rivkin et al., 2005). Evidence indicates that teacher preparation has an impact on the quality and success of special education teachers (Boyd, et al., 2009; Clotfelter et al., 2010; Jackson & Brueggman, 2009; Ronfeldt et al., 2014). Currently, P-12 schools are struggling to recruit and retain special educators and federal and state governments are looking to a variety of solutions to meet this challenge. Clearly, the development of a traditional teacher preparation program at the undergraduate level will not meet the immediate need for teachers; rather, the goal is to meet the need in a longer-term manner. Evidence indicates that better preparation leads to better retention rates (Peyton et al., 2021), which in turn can lead to more consistent instruction, particularly for hard-to-staff schools (Billingsley & Bettini, 2019). Thus, recruiting and retaining effective special education teachers to ultimately improve outcomes for students requires quality teacher preparation – a responsibility that rests on the programs that provide the preparation.

Critical to quality teacher preparation is the work of faculty to develop, disseminate, and hold true to a consistent vision and mission from teaching in individual courses to whole program activities. The purpose of this example is to illustrate the use of a systematic, data-based approach to program improvement using the CEEDAR Center Roadmap (2020). The goal of these activities was to develop a coherent preparation program that clearly emphasizes specific knowledge and skills and leads to better outcomes for undergraduate teacher candidates (Cavanna et al., 2021). This is not a one-shot deal; it requires continuous reflection of faculty and stakeholders both broadly and individually (Floden et al., 2021). It also requires faculty to make the identified specific knowledge and skills explicit to teacher candidates throughout the program (Floden et al., 2021). Going through the reflection and collaborative dialogue in the CEEDAR Roadmap process put us, as faculty, in what Fecho (2005) calls a "wobble" moment: "the wobble signals or calls attention to a shift in balance. Attention must be paid. A response must be authored" (p. 279). Asking questions such as "what are the critical knowledge and skills for successful, effective candidates from our program," unsettles the status quo and creates a "wobble" moment, but given the current context of teacher shortages, changing regulations, and media assaults on teacher preparation programs, it was necessary.

Without continuous review and input from stakeholders, programs can become stale and out of touch with school realities. The use of Q Methodology to understand what is critical to stakeholders is a natural fit. The Q-Sort activity allowed stakeholders, both faculty and school-based personnel, to provide individual, subjective perspectives on what is critical for special educators to know and be able to do while at the same time allowing for the compilation of those ideas to better guide program improvement. Use of the Q Methodology within the context and direction of the CEEDAR Roadmap allowed us to depersonalize the program revision process so it did not appear a call to

change specific individual courses. We believe this encouraged faculty engagement at multiple points across the process.

There are several limitations to the example described here that are important to acknowledge. First, we conducted this Q Study and the activities of the CEEDAR Roadmap with a new program, not one with entrenched courses and extensive faculty ownership of courses. This may have given us more flexibility in creating change; however, it also meant that we continue to revise our revisions as we teach these courses. Second, we began this project before the COVID pandemic and then had to shift to conducting our work to a virtual world. This changed how we engaged with faculty, students, and stakeholders. It also changed how our students engaged with our program. With a shift back to on-campus, face-to-face learning and field experiences, we are reevaluating some of our decisions and identifying new challenges and needs. Third, the participation of our school partners was limited by the quick shift to a virtual world and their need to figure out their school's response to COVID. Our future plans include a second round of outreach to school partners through regular advisory board meetings. Fourth, because we began this study before the impact of virtual learning and the events of the summer of 2020, when we conduct further outreach, we anticipate we will include Q-Sort statements related to culturally responsive pedagogy and knowledge of instructional technology. Similarly, our Q-Sort was disseminated before adoption of the updated CEC 2020 standards, and thus our programs will need to evaluate findings as we align the program to the new standards. Finally, because this review began so early in our implementation of the program, we were not able to immediately include our candidates' voices. As of this publication, our first group of candidates is completing their internship experience. One way we have attempted to understand their development is by asking them to complete concept maps related to their thinking of themselves as special education teachers at the beginning, middle, and at the conclusion of their programs. The analysis of these maps is ongoing but has provided faculty with valuable insights into and feedback on what the candidates are appropriating in their thinking as they progress (Miller et al., 2009). There are several implications of this example for teacher preparation programs. Our purpose was to provide a description of a process, not a product. This is a process that other programs might follow in a program review. In addition, as we mentioned several times, the involvement of administrators in providing faculty with space, time, and support to conduct the program review and then to disseminate to program participants is critical. We do not want to ignore the fact that there were varying levels of engagement and acceptance from faculty and the support of administrators helped in managing the perception of the project, particularly as it impacted individuals. The emphasis is on this being an iterative process and, clearly, the next series of steps is to provide more information and materials to faculty, include student voices in our program review cycle, and evaluate student outcomes.

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Multi-Tiered System of Supports for Teacher Preparation: A Framework to Attract, Retain, and Prepare Special Educators

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Journal of Special Education Preparation
3(1), 34-45

DOI: 10.33043/JOSEP.3.1.34-45
openjournals.bsu.edu/JOSEP

ABSTRACT

Special education teacher preparation programs (SETPPs) take on the difficult task of preparing high-quality educators ready to meet the diverse needs of students with disabilities. This mission is increasingly vital as we face a widespread and long-standing shortage of special educators and declining enrollment in SETPPs. In this article, we will highlight how integrating a multi-tiered system of support (MTSS) model within a teacher preparation program can provide a systematic framework to improve recruitment and retention efforts, stakeholder satisfaction, and pre-service teacher quality. We will provide an illustrative description of how we incorporated an MTSS framework in our undergraduate SETPP, which included a continuum of interventions to meet a wide variety of pre-service teacher needs, data-based decisions and universal screening, and explicit instruction of our core competencies (i.e., knowledge, skills, dispositions). This article opens the conversation on the potential benefits of expanding the MTSS framework into higher education, specifically teacher preparation, as an innovative approach for attracting, retaining, and preparing high-quality special educators.

KEYWORDS

Multi-tiered system of supports, special education, teacher preparation

Most people describe qualities of the "heart" when asked about the characteristics of a great special education teacher (SET). While well-intended, this categorization offers a narrow view of a demanding profession that requires extensive knowledge and skills to be effective (Brownell et al., 2019; Leko et al., 2015). The complexity of SET's work has increased in recent years due to the long-term educational impact of the COVID-19 pandemic and the ever-growing political nature of education. The coordinated efforts of special education teacher preparation programs (SETPPs) to produce knowledgeable and skilled professionals equipped for this challenging career become increasingly vital as we face SET shortages (Mason-Williams et al., 2020; Sutcher et al., 2019). High attrition rates (Billingsley & Bettini, 2019) and declining enrollment in SETPPs (Center for American Progress, 2019) contribute to the well-documented and long-standing shortage of SETs. As a result, SETPPs need to not only offer quality programming but also recruit more individuals to their program and ensure they remain through graduation. This may be a shift in focus for some programs.

SETPPs have the potential to directly impact the quantity and quality of the workforce and, consequently, student outcomes. The goal, of course, is to prepare highly effective SETs that can meet the diverse needs of students with disabilities. It is vital that SETPPs not only recruit more students, especially those from diverse backgrounds, but also monitor and support retention within programs for those students who may be having difficulty with the knowledge, skills, and dispositions necessary to be a special educator. SETPPs may benefit from a systematic, data-based approach to monitor their progress in these areas and overall program effectiveness (Brownell et al., 2020). Summative measures, such as state certification exams,

require students to produce knowledge at the end of a program. These exams fail to provide real-time data that would allow faculty to make proactive changes. For example, program personnel could provide additional support to a pre-service teacher before they drop out of the program or graduate unprepared. Many SETPPs use self-developed observation rubrics for formative performance assessments in practice-based settings (Nagro & deBettencourt, 2017; Wineburg, 2006). However, the observation may be completed by a part-time field supervisor and end up relatively inaccessible to inform faculty or program-wide decisions. Although, little is referenced in the literature related to a formalized approach for data-based decisions in teacher preparation, using data to inform decisions is an established recommended practice in school-based settings (Council for Exceptional Children [CEC], 2020; McLeskey et al., 2017).

This article opens the conversation on the potential benefits of expanding the MTSS framework into higher education, specifically teacher preparation, as an innovative approach for attracting, retaining, and preparing high-quality special educators.

Multi-Tiered System of Supports

Scholars argue the current literature base offers insufficient research in SET preparation to constitute a strong empirical foundation (Brownell et al., 2020; Lignugaris-Kraft et al., 2014). Special education is a relatively new field, and much of the research has focused on targeted interventions for students with disabilities (Brownell et al., 2020; Sinelar et al., 2010). Where gaps in the literature exist, SETPPs must identify complementary research areas for direction. Therefore, SETPPs may seek an already established, systematic approach to guide the development of a data-based model to improve outcomes. Our program looked to the multi-tiered system of supports (MTSS) framework as a model to address the need for systematic data collection and effective pre-service teacher support.

As a brief review, MTSS uses a tiered system to provide these supports, with levels of intensity and individualization increasing through each level. Primary supports, or tier one, provide universal screening and support to all students, with explicit instruction and reinforcement for engaging in appropriate social and learning behaviors and achieving target academic goals. Students who demonstrate additional need beyond primary support move to secondary support, or tier two, which generally consists of more specialized group-based supports that aim to reduce the impact of barriers or risk factors that influence school or social performance. Students with the most significant behavioral or academic needs receive tertiary support, or tier three, in which they access intensive, highly individualized support.

The distinguishing features of MTSS – universal screening, progress monitoring, and a multi-level system of prevention and supports – offer a strong foundation from which to build an organized structure for data-based decision making, as well as professional and behavioral support at the collegiate teacher preparation level. Applying an MTSS-inspired model to a SETPPs offers the opportunity to cultivate a positive learning experience that produces robust educators who prosper and stay in the field. While noticeably absent from the teacher preparation literature, the concept of using a MTSS framework has shown promise for training in-service teachers in classroom management practices (Gage et al., 2017; Grasley-Boy et al., 2019; Simonsen et al., 2013). Tiered models are supported by an extensive literature base that has evolved over time. The purpose of this paper is to open the conversation on the potential benefits of expanding MTSS into higher education, specifically teacher preparation, as an innovative approach for attracting, retaining, and preparing high-quality special educators.

Teacher Preparation Multi-Tiered System of Supports

Teacher preparation-multi-tiered system of supports (TP-MTSS) is a proactive and prevention-focused framework that uses universal screening, a continuum of interventions, progress monitoring, and data-based decisions to prepare high-quality SETs. To demonstrate the framework's feasibility and potential, we provide an illustrative description of how we integrate TP-MTSS within an undergraduate SETPP at a tier-one research-intensive university in the south-central United States. The degree consists of pre-program classes, three semesters of coursework, each with a related field experience, and a semester of clinical student teaching in special education. Students progress as a cohort, and the program prepares them for special education, general education, and English as a second language certifications. Roughly 25 students graduate

FIGURE 1: Sample Disposition Matrix

	Self-Regulated	Prepared	Professional	Emotionally, Socially, & Culturally Intelligent	Determined
	I challenge myself, show initiative, and take ownership of my growth and progress.	**I am ready and willing to take the steps necessary to be successful.**	**I exhibit the qualities of a professional special education teacher.**	**I am emotionally, socially, and culturally aware and responsive.**	**I am committed to being the best educator for children, despite challenges.**
University Setting	Seeks to grow professionally through the knowledge and practice provided in the university classroom Manages time effectively Accepts personal responsibility for current academic achievement by acknowledging role in performance Demonstrates resourcefulness by asking peers and reviewing course materials independently prior to seeking assistance from instructors Sets and pursues goals that foster professional growth	Comes to class with required materials and completed assignments Takes the initiative to get missed materials from peers when absent Reviews online learning platform and syllabi regularly Completes assigned readings	Arrives to class on-time, coherent, and focused Engages in class discussion/ activities in a meaningful and respectful way Responds to email within 48 hours in professional format Communicates absences, changes, and needs to program personnel in a timely manner Demonstrates active listening and appropriate technology use during class time Displays a positive and enthusiastic attitude Asks for clarification and assistance when needed from the appropriate person	Respectful toward the profession, university personnel, and peers by using positive written, spoken, and nonverbal language Exhibits empathy toward self, peers, and program faculty and staff Identifies own biases and prejudices to understand how experiences and background affect peers, professors, and other university personnel Takes appropriate actions to prevent biases from negatively impacting work with others	Completes assignments and meets deadlines in spite of hardships Embraces the hard work of classes and the high expectations of professors Demonstrates dedication to excellence regardless of classroom or personal circumstances

each semester, and the program typically serves 125 students across cohorts.

Comprehensive Support Across Three Domains

Supports within our TP-MTSS framework exist across three domains– foundational knowledge, skills, and dispositions. Foundational knowledge refers to the theoretical content necessary to be a successful SET acquired through reading, listening, or watching. In comparison, the skills domain represents the individual's ability to employ the knowledge in applied settings, which in this case would refer to both conceptual (e.g., virtual simulations, mini-lessons in a college classroom) and field-based learning environments. Together, we synthesized the foundational knowledge and skills identified by the state (e.g., teacher standards; degree programs regulations), professional organizations (CEC, 2020; McLeskey et al., 2017), and university (e.g., priorities, core curriculum). We reviewed the literature and dispositions from other programs to determine the dispositions we felt were necessary for our students to become successful special educators. As a group, we developed a simple domain definition– prevailing tendencies of effective SETs, and a set of five dispositions– ***s****elf-regulated*; ***p****repared*; ***p****rofessional*; ***e****motionally, socially, and culturally intelligent*; and ***d****etermined* (SP^2ED).

Tier 1 Universal Supports

Program personnel explicitly teach the competencies within each of the three domains, with lessons adjusted based on student position in the program timeline. Before implementation, we revised our student handbook to include the rationale for the framework, a description of the procedures, and a detailed list of the competencies for all three domains. As a core Tier 1 practice, program personnel regularly review the updated handbook content related to TP-MTSS with pre-program and current students during scheduled meetings and class time. Faculty also reviewed and revised courses to ensure the syllabi, readings, assignments, and observation rubrics reflected the TP-MTSS language and

FIGURE 1 CONTINUED: Sample Disposition Matrix

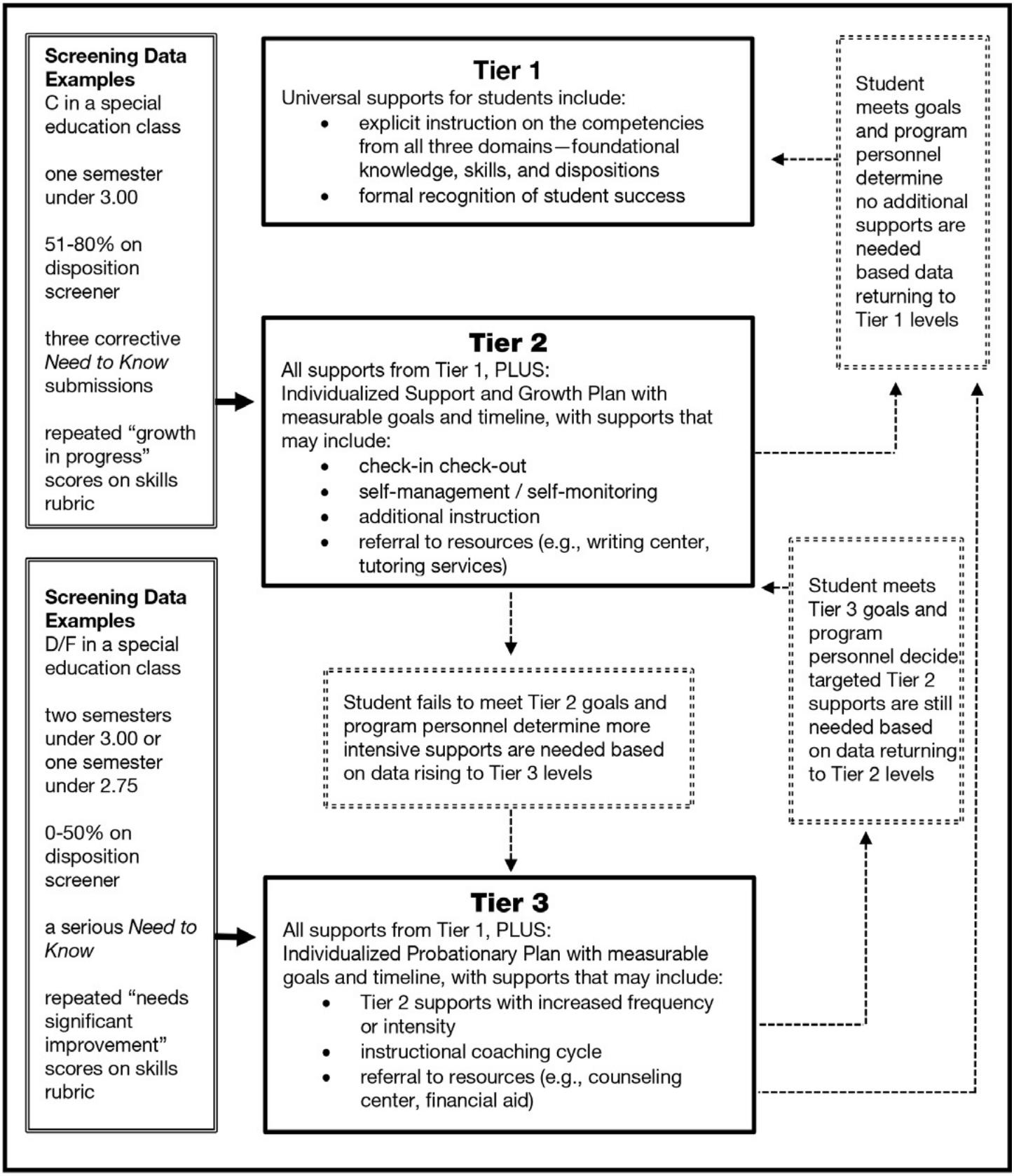
	Self-Regulated	Prepared	Professional	Emotionally, Socially, & Culturally Intelligent	Determined
Field-Based Setting	Evaluates personal performance and its impact on student achievement to identify areas of personal growth Solicits, accepts, and quickly implements feedback Takes initiative by talking with mentor teacher about ways to get involved in classroom Sets and pursues goals that foster professional growth	Adheres to program deadlines in preparation for field experience placements as they pertain to each block (i.e., attending pre-block orientations, completing placement forms) Arrives to placement with completed lesson plans and necessary resources Complete and submit documents on time to the university supervisor (i.e., mentor teacher's schedule, observation schedule)	Prioritizes attendance and punctuality to assigned setting Follows the dress code established by host site and our program Maintains confidentiality unless there is an educational need to know; follows protocol set by our program and district in these instances Collaborates efficiently and respectfully with all affiliated personnel (e.g., field supervisor, mentor teacher, families, paraprofessionals, etc.) Adheres to ethical and legal guidelines for the profession (e.g., seclusion and restraint policies) Demonstrates a positive and enthusiastic attitude Asks for clarification and assistance when needed from the appropriate person Seeks to solve issues by discussion	Exhibits empathy toward self, and all students, parents, teachers, and peers Values and advocates for all students and their families Identifies own biases and prejudices to understand how experiences and background affect students, parents, teachers, and supervisors Takes appropriate actions to prevent biases from negatively impacting work with others Uses professional language and engages in appropriate conversation while at the host site	Demonstrates commitment to excellence in teaching regardless of classroom setting, assigned mentor teacher, or personal circumstances Takes advantage of learning opportunities when offered (e.g., professional development sessions, individualized education program meetings) Familiarizes self with the relevant professional organizations and current research

domain competencies. Revisions included few changes to how the program addressed knowledge and skills, other than ensuring program personnel review observation rubrics in early coursework to operationalize the skill components. However, we identified more substantial changes in the disposition domain when we realized that the program did not have a formalized or systematic approach to teach dispositions.

Within the TP-MTSS framework, we now explicitly teach dispositions across coursework, field experiences, and program-sponsored extracurricular activities. Pre-service teachers receive and are provided instruction on the *Dispositions Matrix* within early pre-program classes, which includes specific examples, stated in the affirmative, for each of the five dispositions separated by setting (i.e., university or field). See Figure 1 for a sample disposition matrix. The pre-service teachers watch videos for each disposition and then complete reflection assignments. Faculty hang posters detailing the dispositions in university classrooms as a visual reminder for pre-service teachers and a teaching tool for faculty. In addition, we schedule mandatory meetings before school-based placements to review the field-based portion of the *Disposition Matrix*. All program personnel are encouraged to use the disposition language in their positive and corrective feedback to students across the university and field-based settings.

Universal supports encompass procedures for teaching but also formal systems for reinforcing when a pre-service teacher exemplifies competencies. All program personnel (e.g., faculty, staff, field supervisors, doctoral student instructors, mentor teachers) use a pre-formatted electronic survey link to send a positive *Need to Know* to the program chair. The online survey asks for the rater's name, the student's name, domain and competency demonstrated, and details about why the program should recognize the student. In addition, pre-service teachers have opportunities to highlight a peer for engaging in the domain competencies by placing a positive *Need to Know* note in a physical box maintained by the program. In response to either submission,

FIGURE 2: Sample Flow Chart for Moving Among the Tiers of Support



a faculty member publicly announces why the individual received a positive *Need to Know* in a shared cohort course or privately informs the student based on preference.

Universal Screening and Ongoing Monitoring

We screen all pre-service teachers currently enrolled in our program and students in pre-program classes across the three domains to identify those at risk for poor outcomes and monitor program effectiveness. The undergraduate program chair and a graduate assistant serve as the TP-MTSS data managers and coordinate data collection and synthesis. All sources of information remain confidential, and TP-MTSS practices align with federal confidentiality regulations (Family Educational Rights and Privacy Act [FERPA], 1974).

Course grades serve as the screener for foundational knowledge. The state education agency requires a 2.75 overall grade point average (GPA) to sit for the certification exam, and our handbook outlines students must maintain a 3.0 GPA in special education-related courses. Consequently, a student must maintain appropriate grades to graduate and become a state-certified teacher, in addition to needing the knowledge to be an effective SET. The program coordinator asks the academic advisors to screen student grades before the start of each semester, and they identify students getting close to, at, or below GPA requirements. In addition, at midterms every semester, the program coordinator prompts faculty to provide the names of students in danger of receiving a C or below. High GPAs do not guarantee effective SETs, nor does a low GPA automatically signify an ineffective teacher. Nevertheless, grades act as a gatekeeper in the current system, and we intend to proactively support students before poor grades become an issue or exist permanently on their record.

A field supervisor and at least one faculty member assess the dispositions of all students at the end of each semester with an online form. The form asks the rater to score the student on a scale of 1 (*almost never displays*) to 5 (*almost always displays*) for each disposition, with an option to provide a brief explanation for the score choice. We expect pre-service teachers to exemplify the five dispositions on the university campus and in field settings. Pre-service teachers complete a more detailed self-assessment at the beginning of the semester, requiring them to rate themselves on each positively stated example listed in the *Dispositions Matrix*.

Program personnel assess skills in courses with applied assignments (i.e., teaching lessons) through common faculty-created observation rubrics at least two times per semester. The setting, rater, and criteria vary based on position in the coursework sequence. Pre-service teachers initially present lessons in the university classroom, moving to field-based placements later in the program. A faculty member, the mentor teacher, and the field supervisor evaluate the lesson and then provide the scores and rubric comments to the TP-MTSS data managers.

In addition to the domain-specific screeners, data managers monitor *Need to Know* submissions. We provide the reusable online survey link to all personnel involved in pre-service teacher development (e.g., faculty, staff, field supervisors, mentor teachers) to positively acknowledge or indicate areas of concern throughout the semester across all domains. For example, a mentor teacher may report that the pre-service teacher arrived late multiple days.

Data-Based Decisions

SETPPs collect numerous pieces of data each year to fulfill SEA and university requirements and monitor individual student progress. Implementing TP-MTSS prompted a thorough reexamination of our current data system's efficiency and usability. Results of the appraisal indicated that numerous data sources failed to produce useful benefits for the program. Most notably, data tended to be fragmented across the college, repetitive, and largely inaccessible. This led the program to improve current data systems to use the data in real time to make decisions about instruction, support, and program improvement. Where possible, data sources with overlap were consolidated. All pre-service teacher data is now centrally located, deidentified, and available to select personnel to aid in program, department, and college-level initiatives. For example, program faculty receive deidentified disposition screener summary data to incorporate additional content into relevant courses. Synthesizing data allows our TP-MTSS data managers to easily identify patterns across students highlighting program implications and within students indicating the need for more intensive supports. The special education field endorses using valid data to inform decisions in school-based settings (CEC, 2020; McLeskey et al., 2017). This initiative offered a real-life example of using data to inform decisions and adopting TP-MTSS gave us the opportunity to model best practices.

Tiered Intervention Structure

The primary purpose of the tiered intervention structure is to support pre-service teacher development (i.e., not inherently punitive). We describe TP-MTSS as a structured support system designed to provide targeted assistance rather than simply pinpointing areas for growth. Collectively, our program personnel outlined benchmarks for each domain, delineating the specific scores that would identify the need for

TABLE 1: Tiered Support Student Examples

SCENARIO	QUALIFYING AREA	SUPPORTING DATA	INTERVENTION	PROGRESS MONITORING
Kristin struggled with the transition to college life. She grew up in a small rural area and many of her introductory courses included more students than in her high school graduating class. Overwhelmed by the drastically different learning format, increased academic expectations, and social pressures, Kristin's GPA suffered in her first year of college. She was nervous that she would not maintain at least a 2.75 GPA for the certification exam.	Foundational Knowledge	2.79 Overall GPA	Check-In Check-Out (Tier 2): Kristin requested to meet with her mentor once a week in person. Her goals centered on time management, organization, and assignment completion. Weekly meetings focused on creating an action plan for upcoming assignments, celebrating the previous week's successes, and reviewing feedback from professors. The mentor also offered helpful strategies to increase productivity, communicate with professors, and navigate the college experience.	A formal grade check occurred at midterm and end of the semester.
Jason's friends know him as the guy who is perpetually 15-minutes late. He was assigned a field experience placement at an elementary school in another town and the traffic makes the drive time unpredictable. By the second week, Jason had arrived late three times already. His cooperating teacher was very impressed with his instructional skills but worried about his professional behavior.	Dispositions	Three *Need to Knows* Submitted by Mentor Teacher	Self-Monitoring (Tier 2): Jason attended an initial meeting with his mentor to learn the self-monitoring procedures and review the disposition expectations. Daily, Jason recorded his wake-up time, getting ready time, drive time, and if he arrived at the field placement on-time. Jason reflected on his data and made changes in his routine to meet his disposition goal. Mentor and cooperating teacher provided verbal reinforcement.	The student sent a picture of his self-monitoring log weekly to the mentor.
Lisa considers herself to be extremely shy. She has a hard time with her teacher voice and effective classroom management skills in her initial field placements. The program offered Tier 2 support in the form of additional small-group instruction addressing her areas of need. Unfortunately, she showed little progress in the field-placement when it came time for the official review of her Tier 2 goals.	Skills	Lack of Progress in Tier Two Supports & Low Teaching Rubric Scores	Coaching Cycle (Tier 3): Lisa's mentor observed her teaching in the classroom at least once a week. Sessions were scheduled so that Lisa and her mentor could immediately debrief after the observation. The mentor provided specific written and verbal performance feedback and facilitated goal setting and action planning. When possible, the mentor modeled a teaching voice and specific classroom management skills. Lisa and her mentor regularly reviewed goal data to monitor progress.	Mentor completed the program teaching rubric with each observation.

Tier 2 and Tier 3 supports. Data managers continually monitor records and initiate meetings with relevant personnel to discuss the need for tiered supports when scores reach the agreed-upon cut points. Pre-service teachers requiring Tier 2 support receive a *Support and Growth Plan*, and those in need of Tier 3 supports receive a *Probationary Plan*. See Figure 2 for a flow chart representing the tiered intervention structure.

Tier 2 supports include supplemental interventions designed to target pre-service teachers at risk for behaviors that are contradictory to those displayed by highly effective SETs or at risk of not becoming certified and employed teachers. We provide targeted interventions to increase practice and feedback in the area of need. The program coordinator, identified mentor, and pre-service teacher write the *Support and Growth Plan* together, guided by the available data. See Figure 3 for a sample template. An individual in the department (e.g., faculty, graduate assistant, staff) coordinates the intervention, acts as a mentor, and collects prog-

ress monitoring data on the goals. Data managers select these mentors based on their relationship with the pre-service teacher and their area of expertise. Mentors, in addition to the overall TP-MTSS training, receive a protocol for core components of the specific intervention, although they are given the flexibility to adjust based on their professional expertise. All aspects of the intervention Tier 2 supports phase out at the time of review if the data returns to Tier 1 levels and the pre-service teacher meets goals. The plan can continue or turn into Tier 3 support if data warrants.

Tier 3 supports incorporate individualized and intensive interventions intended to assist pre-service teachers with high-risk behaviors, which may prohibit them from achieving their goal of becoming a SET. Interventions focus on the underlying reasons for the behavior and prioritize comprehensive support by integrating wraparound supports from campus and community organizations. The program coordinator, mentor, and pre-service teacher develop the *Probationary Plan* together based on data, and the process follows similar procedures to Tier 2. The document includes the same components as the Tier 2 plan but also asks the team to describe any previous interventions with the corresponding data. If no progress or regression occurs, we consider two options: extending Tier 3 supports or potentially terminating the student from the program. The fundamental goal of TP-MTSS is to provide support and prepare highly effective SETs. In extreme cases, and with ample data to inform the decision, the support may involve helping a pre-service teacher select another profession where they can find success.

Selecting Interventions When Research is Scarce

Established tiered support frameworks integrate a continuum of evidence-based interventions consistently shown to provide positive outcomes based on a long history of school-based research. However, the literature offers significantly less information regarding effective methods and interventions for teacher preparation (Brownell et al., 2020; Leko et al., 2015). Program personnel involved in the TP-MTSS implementation process relied on research related to adult learning strategies, knowledge gained from school-based applications of MTSS, and an understanding of the process of intensifying an intervention (Fuchs et al., 2017) to compensate for the limited research when selecting tiered interventions. Intervention selection depends on the area of need, the underlying reasons, pre-service teacher input, and faculty recommendations. See Table 1 for descriptive examples of tiered supports.

Tier 2 Interventions. Program personnel choose from three Tier 2 interventions: self-monitoring, check-in check-out (CICO), and supplemental instruction. The process of self-monitoring involves observing a specific aspect of one's own behavior, recording the results, and using the information to improve outcomes in the future (Rispoli et al., 2017). Self-monitoring is related to positive behavior change in a wide range of adult and student populations (McDougall et al., 2017; Rispoli et al., 2017). After operationally defining the target behavior(s), the pre-service teacher is required to self-record the frequency. All target behaviors are written in the affirmative. Mentors provide recommendations on monitoring the behavior, manipulating antecedent conditions, using the data to inform change, and providing their own reinforcement. This student-directed intervention is intended to help the pre-service teacher build the capacity for behavior change through newly acquired self-management skills. Pre-service teachers provide data to their mentor on the timeline agreed upon in their plan as a measure of fidelity.

Frequently used as a Tier 2 intervention in school-based settings, CICO is a structured feedback system designed to help individuals meet behavioral expectations (Hawken et al., 2015; Todd et al., 2008). CICO combines the components of mentoring and ongoing behavioral feedback. Research supports using CICO in school-based settings, with several studies representing high-school students (Drevon et al., 2019; Maggin et al., 2015). The TP-MTSS version of CICO requires the pre-service teacher to meet with the mentor weekly or bi-weekly in person or online. We prioritize the relationship when choosing an individual to serve as the mentor. The pre-service teacher discusses their progress and feedback they have received from their instructors to the mentor during the scheduled meetings. Mentors provide performance feedback on the data, engage in action planning, and facilitate goal setting.

Finally, the program may decide the pre-service teacher requires additional instruction or resources in the identified area of need. In this case, the program prioritizes area of expertise when selecting the mentor, which we have found limits the planning investment since they often have ready-to-go resources and plans. The mentor provides explicit instruction individually or to a small group for approximately 30 to 60 minutes weekly or bi-weekly. Pre-service teachers may also receive resources to review and reflect on in writing.

Tier 3 Interventions. Program personnel draw on department, college, university, and community resources to create a comprehensive and holistic plan that puts the student at the center. Students may experience difficulties outside the scope of our domains, such

FIGURE 3: Sample Support and Growth Plan Template

Support & Growth Plan

"Who dares to TEACH must never cease to LEARN" - John Cotton Dana

Student Name	
Date	
Support Area	❑ Foundational Knowledge ❑ Skills ❑ Dispositions
Student Data	
Assigned Mentor	
S.M.A.R.T. Goal(s)	
Method of Support	❑ Check-In/Check-Out ❑ Self-Monitoring ❑ Additional Instruction ❑ Resource Referrals ❑ Additional Resources ❑ Other
Plan Details	
Student Expectations	
Mentor Expectations	
Timeline for Completion	
Data Collection Schedule	

My signature below acknowledges that I have read and comprehend the plan as written. I understand the expectations and agree to abide by procedures outlined.

_____ _____
(Signature of Student) (Date)

_____ _____
(Signature of Program Coordinator) (Date)

_____ _____
(Signature of Mentor) (Date

as food insecurity, mental health concerns, student loans, academic deficiencies, and family responsibilities. The team can choose any Tier 2 supports at an increased level of intensity for skill deficits in the areas of dispositions and foundational knowledge. Pre-service teachers who require Tier 3 support in the skill area of receive intensive instructional coaching, which refers to the ongoing process of an experienced individual (coach) observing and then providing feedback and support to assist another individual in their desire to improve a specific teaching skill (Ennis et al., 2020; Stormont et al., 2015). The literature supports coaching as an effective method for improving pre-service teacher instructional practice (Brownell et al., 2019; 2020). In this program, the process involves the mentor regularly observing in the classroom setting, providing written and verbal performance feedback, and engaging in modeling, action planning, and goal setting. Mentors and pre-service teachers regularly review the data to monitor progress.

IMPLEMENTATION CONSIDERATIONS

As you start to think about how TP-MTSS might fit within your preparation program, there are a couple of things to consider. First, implementing a program-wide initiative with fidelity requires buy-in, input, and participation from all affiliated program personnel and leadership. This includes, but is not limited to, faculty, staff, instructors, adjuncts, graduate assistants, field supervisors, academic advisors, select representative students, and the department chair. As an initial step, make sure to include everyone in the planning process because the authentic discussions during this time ensure the procedures are supported, feasible, and appropriate across settings. Even though faculty and staff regularly mentor students and analyze data, it is especially beneficial to include leadership in conversations related to assigning structured roles (e.g., data managers, mentors) to evaluate the responsibilities against their current workload. As they see the need, smaller programs may need to seek volunteers outside of their department to serve as mentors. A systems-level approach requires training for all affiliated program personnel in every aspect of the TP-MTSS framework before implementation and ongoing check-ins (e.g., regular program meetings, quarterly retreats) to monitor effectiveness and personnel needs. Discussions during the ongoing check-ins may indicate the training needs go beyond the specifics of the day-to-day procedures to topics such as elements of effective mentoring or coaching frameworks. Ultimately, the framework's success comes from a mutual understanding of the TP-MTSS plan and agreement on its importance for the program goals.

Second, simplify the data collection and management process and proactively set the program up for success. Select TP-MTSS data sources (i.e., screeners, progress monitoring tools) that are simple and efficient. This may mean revising current measures, where possible, to minimize overlap across sources and streamline the content to focus on key progress indicators. Our program relies on the various applications in the university-affiliated G Suite (e.g., Google Drive, Google Forms, Google Sheets, Calendar) for both data collection and management. All data sources (e.g., *Need to Know*, disposition self-assessment and screener, grade checks by advisor and faculty, observation rubrics, progress monitoring data) are Google Forms that automatically populate into a Google Sheet for that is conditionally formatted to easily identify patterns and separate data by cohorts. While the primary data manager should regularly review the data, it is helpful to set up the Google Form to send an email notification each time a form is submitted. A program may also consider proactively scheduling email reminders to prompt program personnel to complete screening measures and submit progress monitoring data to correspond with the assessment schedule. There are more complex data management tools available for sale to SETPPs that may offer additional capabilities. However, the user-friendly, accessible, and cost-effective university-sponsored tools (e.g., G-Suite, Qualtrics, Microsoft Products) are often more than enough to support your TP-MTSS framework.

Third, ensure that you focus time on developing a system for celebrating successes in addition to structured supports. Formal recognition contributes to developing a positive program culture and provides necessary feedback to the pre-service teachers. Reinforcement of domain competencies is the backbone of the framework. Finally, adapt TP-MTSS to your program. The framework should reflect the pre-service teachers and communities you serve, the unique elements of your program, and the priorities of your department and university.

Recruitment and Retention Efforts

Modern special education exists within an era of widespread shortages, high turnover rates, and declining enrollment in teacher preparation programs (Billingsley & Bettini, 2019; Sutcher et al., 2019). Whereas the supply of SETs is decreasing, the number of students receiving special education services continues to increase year after year (U.S. Department of Education, 2021). New approaches certainly have their place in the solution, but our SETPP instead turned toward a familiar and established framework for guidance. After nearly four years of implementation, we have

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seen the TP-MTSS framework increase our capacity to recruit students to our program and retain them through graduation and employment.

Most official recruitment efforts from our school of education tend to focus on selecting this university over others, assuming the student knows their intended major and will apply at the appropriate time. Highlighting the supportive and positive framework guiding the program during events for high schoolers and transfer students surely will support recruitment efforts. Although, according to one survey, approximately 30% of undergraduates change their major within three years of enrollment (Leu, 2017). This highlights the importance of another, equally as important, recruitment window—the 45 to 60 credit hours of coursework before the student formally applies to the program. Implementing the framework in education-related classes the students take before they formally apply showcases the positive nature of the program and offers the tiered support structure to ensure they can meet the application requirements. Thiem and Dasgupta (2022) explain that college students from historically marginalized groups may have less social capital than their White peers, which, in this case, refers to a student's ability to obtain university-related resources or information from personal connections. When needed, the systematic and proactive nature of TP-MTSS in preprogram classes has allowed us to address social capital barriers by connecting students with mentors that can help them navigate university life and systems early in their educational careers, potentially putting the student in a better position to meet application requirements. Innovative solutions to the SET shortage may require looking at recruitment in different ways, including ways to support and connect with students from initial enrollment and application to the program.

The framework prompted a paradigm shift in the way we approach students who were initially unsuccessful in the program, leading to higher retention rates for those students. In the past, if a student showed deficits (e.g., always late, low assignment grades), they may have been placed on a growth plan and expected to figure the problem out independently. We often proceeded under the assumption the shortfall resulted from a performance deficit (i.e., will not do), rather than exploring the potential it was a skill deficit (i.e., cannot do–yet requires explicit instruction) or a consequence of navigating conflicting priorities (e.g., finances, needing to work, taking care of family). This approach allows us to dig into the root of what is causing our students to need support and tailor a plan for each student.

Many students struggle with the transition to college life as they encounter challenges related to increased academic demands, living on their own, new social opportunities, and for some, financial independence. Just under a third (29.5%) of college students reported they experienced high levels of stress (highest ranking offered), according to the National College Health Association (2022). Not surprisingly, the TP-MTSS data post-COVID-19 show an increased number of students requiring more intensive support to deal with the fallout from the pandemic in schools and their personal lives. Pre-service teachers may not be able to meet program expectations due to their struggle to navigate college life, rather than inability, a deficit in skills, or a lack of desire to become a teacher. With the well-documented shortage of SETs, every pre-service teacher counts. TP-MTSS allows the program to help them through (i.e., build skills, offer resources, referrals to campus supports) those circumstances rather than lose them from our program or the teaching field altogether. The students vocalize

their appreciation for the supportive, rather than punitive, nature of the tiered intervention structure, and they will sometimes ask for tiered supports before our data sources detect the need. The framework has provided the program with the structure to develop high-quality resilient educators, who are self-aware of their needs, approach their profession with a growth mindset, and celebrate their successes–all of which will help them thrive and remain in the field.

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Innovative Approaches for Preparing Special Education Preservice Teachers

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Journal of Special Education Preparation
3(1), 46-55

DOI: 10.33043/JOSEP.3.1.46-55
openjournals.bsu.edu/JOSEP

ABSTRACT

For years, there has been a shortage of educators qualified to teach students with disabilities. The effect this has on student outcomes is immeasurable. To overcome this shortage, universities are searching for ways to enroll more students into their special education programs, ensure these graduates are prepared for long-term employment, and arm them with the skills necessary to best prepare their future learners. To this end, special education teacher educators seek ways to instruct most effectively during their limited time with their preservice teachers. This article discusses an instructional method to help teacher educators accomplish this goal, drawing on theoretical frameworks related to active learning techniques. Compared to the traditional method of instruction, the blended learning approach affords teachers more in-class time to actively engage preservice teachers with their course content while maintaining a rigorous learning environment. The authors explain how this model can be incorporated into synchronous and asynchronous courses and share valuable online educational resources for successful implementation. Additionally, the authors will discuss active learning strategies and video analysis tools to support preservice teachers in both the classroom and during field supervision. All of these focus on equipping preservice teachers to effectively handle the diverse and constantly evolving demands of the contemporary classroom, which may positively impact teacher retention and create a more stable teaching workforce.

KEYWORDS

Active learning strategies, blended learning, educational technology tools, preservice teachers, teacher preparation programs

The Institute of Education Science released its most recent School Pulse Panel findings, which indicated that in August of 2022, special education was the highest area of understaffed teaching positions nationwide. In fact, 65% of public schools reported a shortage in this area at the beginning of the 2022-2023 school year (Institute of Education Sciences, 2022). While this information is concerning, it is unsurprising for school administrators who fill vacancies and teacher preparation programs that recruit students (King & Weade, 2022). Teacher shortages in special education have been an issue for over 45 years (Billingsley & Bettini, 2019). This struggle continues despite efforts by the U.S. Department of Education (Mason-Williams et al., 2020), as well as state agencies and local school systems (Billingsley & Bettini, 2019). Nevertheless, special education teachers are leaving the field at an alarming rate, and college students are not entering the field quickly enough to compensate for these vacancies (Harper et al., 2022; King & Weade, 2022). Because of the decrease in enrollment, many colleges are collapsing courses and condensing programs to exit preservice teachers in as few credit hours as possible while ensuring program viability (Goode et al., 2023; Imig et al., 2016). While this change may be integral to a program's sustainability, compressing curriculum can negatively impact the

quality of teachers exiting a program (Billingsley & Bettini, 2019). Furthermore, feeling unprepared to meet the classroom demands directly impacts teachers' decision to stay in the classroom (Billingsley & Bettini, 2019). Moreover, this shortage of special education teachers directly impacts the education of students with disabilities. Educational outcomes of students with disabilities lag far behind their peers without disabilities in the area of reading and math in both grades four and eight (National Center for Education Statistics, 2022), despite their entitlement to a Free and Appropriate Public Education (FAPE) provided by the Individuals with Disabilities Education Act (IDEA; Individuals with Disabilities Education Act, 2004). IDEA (2004) mandates that students with disabilities receive an education specially designed to meet their unique needs; however, without qualified personnel to design and deliver this instruction, this is difficult to accomplish. This indicates the importance of special education teachers who possess strong pedagogical backgrounds steeped in a deep understanding of how students learn best (Brownell et al., 2020). Teacher educators who provide this strength of knowledge to their preservice teachers may produce better-prepared educators who are less likely to leave the field due to their ability to manage the unique demands and challenges of this field (Billingsley & Bettini, 2019).

Problem Statement

Teacher preparation programs must ensure special education preservice teachers exit their programs prepared to teach kindergarten through twelfth grade (K-12) students with disabilities to think critically in order to meet their individualized, appropriately ambitious goals (Endrew F. vs. Douglas County School District, 2017; McLeskey et al., 2019). These goals should be written to prepare graduates to be as independent as possible, which for many, is to enter the 21st-century workforce.

The need to prepare students for innovative industries is becoming increasingly apparent with the emergence of technological tools now supported by artificial intelligence, which will impact an unknown number of jobs these technologies may be able to automate (e.g., Chat GPT Plus, GPT-4, BARD). Therefore, K-12 special education graduates should be prepared to face a rapidly changing job market. In order for K-12 students to accomplish this, higher education courses must provide preservice teachers with theoretical and conceptual frameworks and evidence-based practices necessary to meet the high demands of the students they will serve (Lee et al., 2017; Massey et al., 2022).

Preservice teachers also need modeling and guided practice opportunities to demonstrate their ability to educate students with disabilities from diverse backgrounds using targeted, specially designed instruction. Providing preservice teachers with additional time to practice effective instructional strategies can help strengthen their skillset and potentially impact their decision to stay in the classroom (Billingsley & Bettini, 2019). Building upon this need, the next section will explore a potential solution for special education teacher educators to enhance their instructional methodologies through a more active and engaging learning environment using a blended learning instructional approach (Massey et al., 2022; Singh et al., 2021).

Potential Solution

Based on the challenge of teaching content and pedagogy while modeling a rigorous, active learning environment, teacher educators may decide that a blended learning approach would better meet their needs than the traditional teaching method (Singh et al., 2021). The blended learning approach includes a combination of in-person and online learning activities, student-centered instruction, and educational technology tools, all aimed at increasing engagement, motivation, and content mastery (Hrastinski, 2019; Singh et al., 2021). The blended learning approach also allows preservice teachers to learn in a more rigorous environment that more closely represents necessary instruction in the K-12 setting (Massey et al., 2022; Singh et al., 2021). Technology-driven tools can help teacher educators meet these needs.

Blended Learning Approach

The authors recommend the blended learning model to teach preservice special education teachers. This method allows preservice teachers to complete formative tasks and assignments for grades or synchronous discussions (See Table 1). These assignments focus on acquiring content and demonstrating an understanding of the material typically covered via lecture during the initial phase of the traditional teaching method. Completing introductory assignments before attending face-to-face or synchronous classes allows the teacher educator more instructional time for modeling, guided, and independent practice activities (Jia et al., 2020; Lee et al., 2017; Massey et al., 2022). Through the traditional teaching method, independent practice activities are often assigned as out-of-class work instead of completed under the watchful eye of the course instructor, thus 'flipping' instruction (Hamdan et al., 2013; Massey et al., 2022).

The blended learning approach helps teacher educators and their students in several ways. First, by completing preclass assignments before class, preser-

TABLE 1: Teaching Tools At a Glance

Technique	Description	Preparation Time	Resources Needed	Approximate Costs
Discussion Boards				
Perusall	Both are discussion platforms allow students to embed social annotations within documents and teacher-selected videos (Perusall), and student-created videos (Flip).	Moderate	https://www.perusall.com/	Teacher-uploaded materials are free. Textbooks are free for instructors to adopt and e-rented to students.
Flip (formerly Flipgrid)		Minimal	https://info.flip.com/	Free
Collaborative Presentation Tools				
Nearpod	Both incorporate formative assessments and active learning opportunities within presentation tools (e.g., PowerPoint).	Minimal. Once a presentation tool has been created, the time involved includes creating formative assessments.	https://nearpod.com/	Basic features are free, additional plans are available.
Pear Deck			https://www.peardeck.com/	Basic features are free, additional plans are available.
Formative Assessment Tools				
Edpuzzle	Embed questions within videos	Minimal	https://edpuzzle.com/	Basic features are free, additional plans are available.
Khan Academy	Practice exercises and instructional videos	Moderate	https://www.khanacademy.org/	Free
Kahoot!	Game-based quiz platform	Minimal	https://kahoot.com/	Basic features are free, additional plans are available.

vice teachers hear or read introductory content asynchronously in a way that works best for them (e.g., time of day, day of the week). Second, if a preservice teacher needs to review information several times to process the content, that flexibility is available (Shand & Farrelly, 2018). Effective instructors also encourage preservice teachers to reach out to them to ask questions about the content or assignment, meet with the students beforehand if extra assistance is needed, or ask students to bring questions to the synchronous learning environment for further discussion (Shand & Farrelly, 2018). This pedagogical approach increases the likelihood that preservice teachers (a) come to class with an improved understanding of the introductory material; (b) are prepared for class discussions and activities; and (c) are ready to apply skills or knowledge learned (Massey et al., 2022; Shand & Farrelly, 2018). Implementing the blended learning approach in higher education also models best practices for students with disabilities because it provides flexibility, offers opportunities for individualized learning, and includes ongoing support to master the content more effectively, all of which are high-leverage practices for students with disabilities (McLeskey et al., 2019; Shand & Farrelly, 2018). High-leverage practices in special education are evidence-based teaching strategies identified as impacting student learning outcomes (McLeskey et al., 2019). Some best practices related to high-leverage practices in instruction include promoting active student engagement, providing intensive instruction, and giving positive and constructive feedback to encourage student success (McLeskey et al., 2019). High-leverage practices can be modeled for preservice teachers through the blended learning model. The next section will discuss specific web-based tools that teacher educators can use to model high-leverage practices and measure students' performance on pre-course assignments.

Pre-Teaching Content

Teacher educators might consider three types of web-based sites to preteach course content: discussion board assignments, collaborative presentation tools, and formative assessment activ-

ities. Discussion boards are typically online platforms where students and instructors can communicate through written messages to share ideas, ask and answer questions, and collaborate on projects (Douglas et al., 2020). Collaborative presentation tools are typical course presentations (e.g., PowerPoint) adapted to include formative assessment activities embedded throughout. Formative assessment activities are quick checks for understanding to monitor students' learning and identify needs or instructional next steps. This article will discuss implementing these through engaging and motivating web-based sites, including Perusall, Flip, Pear Deck, Nearpod, Edpuzzle, Kahoot!, and Khan Academy. The first two sites, Perusall and Flip, are discussion board sites.

Discussion Boards

When used effectively, asynchronous discussion board assignments can improve preservice teachers' understanding of a course topic, impact their knowledge base, and allow them to participate in deeper discussions during synchronous class sessions (Douglas et al., 2020). One discussion board website, Perusall, accomplishes this by providing students with a social connectedness to their classmates and instructor. Perusall allows teacher educators to upload content such as presentations (e.g., PowerPoint, Google Slides, Canva), videos, articles, chapters, or a textbook to the online website, then create assignments based on those materials. Teacher educators then embed questions within the uploaded material, and preservice teachers respond similarly to current social media applications (e.g., text messages, emojis, upvoting, or hashtags). Students can also add documents and pictures while engaging in asynchronous conversations. Perusall grades students' submissions in real-time and scores are relayed immediately to the teacher educator's gradebook within Perusall and participating university's learning management system. Teacher educators set the grading parameters for each assignment. The program offers many options, such as the number of responses preservice teachers should post within each assignment and the necessary quality of the posts to earn full credit.

Another web-based discussion board website, Flip (formerly Flipgrid), can be used to pre-teach content through questions posted by the teacher educator either within their university's learning management system or directly within the Flip website via text or video. Teacher educators can create questions based on a class reading assignment, video, or other forms of content (Massey et al., 2022). Students create one to ten-minute videos responding to the teacher's prompt; the teacher educator sets the parameters for the length of students' responses. The teacher then assesses the responses to evaluate their understanding. Classmates and the instructor can review students' videos and respond with text messages or video replies. In addition to using discussion boards in a blended learning course, collaborative presentation tools are another effective way to engage students and promote collaboration when pre-teaching content.

Collaborative Presentation Tools

Repetition can become monotonous for anyone, including preservice teachers. So, besides discussion board assignments, teacher educators may choose to vary weekly pre-class assignments through other asynchronous means. Two options teacher educators might consider are Pear Deck and Nearpod. These sites build upon presentation tools such as PowerPoint, Google Slides, and Canva, then allow teachers to supplement their presentations with formative assessment measures. Some available interactive options in both programs include open-ended, true/false, or multiple-choice questions, matching and drag-and-drop activities, Venn Diagrams, drawings, and interactive maps. When Pear Deck and Nearpod are used as pre-class assignments, teacher educators can gauge preservice teachers' understanding of the material presented and adjust synchronous instruction accordingly. If the teacher educator chooses, these programs also include features that allow students to work together on collaboration boards, allowing them to share ideas and provide insight and feedback to one another. Additionally, if teacher educators choose to use either interactive presentation programs during their synchronous or face-to-face learning time, they can see real-time formative assessment data on preservice teachers' insight and understanding before moving to the next slide. Through these tools, both Pear Deck and Nearpod can help to identify areas where preservice teachers need additional support.

By utilizing collaborative presentation tools in preservice teacher training, such as the tools described above, teacher educators model best practices for students with disabilities. These sites promote inclusive participation, active engagement, and accessible materials that support multiple means of representation, expression, and engagement. These are the foundational guidelines for universal designs for learning (CAST, 2011) and are also high-leverage practices (McLeskey et al., 2019). In addition to using collaborative presentation tools, incorporating formative assessment tools within a blended learning course can provide valuable insight into preservice teachers' understanding of course material

before they attend synchronous instruction sessions.

Formative Assessment Tools

To vary pre-course assignments, teacher educators might consider using other online educational resources that ensure accountability and check for understanding. The website, Edpuzzle, allows teacher educators to upload personal or commercial videos (e.g., YouTube), then embed questions within the video. On the teacher's Edpuzzle dashboard, the instructor can see how much of a video preservice teachers watched or if they watched it multiple times. They can see which questions preservice teachers answered correctly or incorrectly. They can grade open-ended responses and see the grade Edpuzzle assigned to each student.

Kahoot! is a quiz-based website that teacher educators use to create synchronous and asynchronous assignments. Preservice teachers' responses can indicate their understanding of the assigned readings, critical concepts, or background knowledge on a topic. Teacher educators can then use those responses to tailor synchronous instruction more accurately. Teacher educators can create Kahoot! assessments with multiple-choice and open-ended questions, polls, word clouds, puzzles, and other formative assessment measures depending on the plan chosen.

Finally, Khan Academy offers a library of lessons, videos, and practice exercises that explain key concepts in subjects such as reading, language, mathematics, economics, and science. This website is helpful within methods courses to strengthen preservice teachers' content knowledge of a subject. Within Khan Academy, teacher educators can create a course and assign Khan content and activities for preservice teachers to complete. Teacher educators can see participants' progress, scores on formative or summative assessments, and time spent actively learning within the website. By incorporating discussion boards, collaborative presentations, and formative assessment tools into pre-class blended learning assignments, teacher educators lay a solid foundation of background knowledge modeled by instructional techniques that actively engage preservice teachers. The next section will explore active learning strategies teacher educators can use during synchronous class time.

Active Learning Strategies

One benefit of pre-teaching content typically covered via lecture is that teacher educators have more time during face-to-face or synchronous instruction to engage in active learning activities and apply the content learned (Hrastinski, 2019; Massey et al., 2022; Singh et al., 2021). Active learning strategies allow preservice teachers to delve deeper into content while working at a guided pace on tasks supported by the teacher educator, which helps to foster a positive, student-led classroom community (Lombardi et al., 2021). Below is a list of potential active learning strategies teacher educators can use in their synchronous classroom (see Table 2). Among them include the use of strategies such as role-play.

Role-Play

Role-play is an active learning strategy that can be used in higher education to allow preservice teachers to rehearse various concepts, instructional approaches, or strategies within a mock instructional setting (Brownell et al., 2019; Wilkinson & Potts, 2022). When roleplaying, preservice teachers experience unknown variables in an activity as other 'actors' (peers) tackle a given problem from a different mindset (Brownell et al., 2019; Wilkinson & Potts, 2022). The opportunity to engage in rehearsal dialog allows preservice teachers to practice typical special education teacher responsibilities such as teaching a concept, contributing to the Individual Education Program (IEP) team's decision-making process, experiencing how a student might feel to have decisions made for them by a committee, or understanding why a parent might react in a particular way during a parent conference or IEP meeting, all prior to conducting these meetings in the field (Wilkinson & Potts, 2022). Role-playing helps preservice teachers develop problem-solving skills, practice collaborating with others, and think critically and creatively about an issue (Wilkinson & Potts, 2022). In addition to using role-play as a student-centered learning activity, other techniques can be incorporated into special education preservice teacher education courses to promote and model active learning and encourage a deeper understanding of course material.

Student-Centered Learning Activities

Student-centered learning activities during synchronous or face-to-face class time allow preservice teachers to develop independent thinking, collaborative learning, and leadership skills by giving them tasks to perform actively (Lombardi et al., 2021; Singh et al., 2021). When implemented in teacher preparation courses, teacher educators are modeling how to encourage students to think more critically about a topic. These activities lend themselves to gaining knowledge from facilitated teacher-guided interactions and impactful peer exchanges (Wanner & Palmer, 2018). Listed in Table 2 are additional strategies that encourage preservice teachers to think independently about an issue and collaborate with class-

TABLE 2: Active Learning Tools At a Glance

Technique	Description	Preparation Time	Resources Needed
Role-Play Activities	Imitate a person or situation in the classroom setting or special education process.	Moderate	Preconceived scenarios and well-defined roles
Concept Maps	Divide students into groups and assign a reading or discussion topic. Students write key terms or snippets of information on paper or sticky notes then the whole class discusses and organizes content into a flowchart.	Minimal	Paper and writing utensils, possibly sticky notes
Fixed/Growth Mindset Paired Discussions	Present students with an issue. Ask one person in the pair how one might react if (s)he uses a fixed mindset and the other approaches the issue with a growth mindset.	Minimal	Prepared conversation content and prior knowledge of Fixed and Growth Mindsets
Gallery Walks	Post statements around the room. Give students a predetermined number of dots. Ask students to place a dot on the statement(s) they agree with the most, then discuss.	Minimal	Poster board paper, easel pad paper, or images/ content placed around the room.
Infographics	Representation of information presented in a flowchart-type visual design.	Minimal	Sites such as Canva, Venngage, etc.
Jigsaw Activities	Divide students into groups. Each group has a different topic and becomes the "expert" on this. Re-mix groups with one "expert" on each topic in the new group and share the content learned.	Moderate	Copies of assigned reading, paper, and pen. When homogeneous groups remix, each should complete a task to demonstrate an understanding of how jigsaw pieces fit together (e.g., picture, graphic organizer, etc.).
Poster Rotations	Write content questions on poster paper. Divide students into groups. Have groups rotate through each poster adding content to previous responses. Review in the whole group setting.	Minimal	Poster Board paper or large easel pad paper
Sticky Note Discussions	Divide students into groups. Assign a reading. Ask students to take notes on the content they want to discuss. Share in small groups.	Minimal	An assigned reading and Sticky Notes.
Think-Pair-Repair Activities	Instructor poses a question and asks students to answer it independently. Then pair students with a partner to develop one cohesive response.	Minimal	A question to use for conversation
Socratic Circles	Conversations in which students work together to construct meaning through questions posed. The questions are intended to deepen students' insight. The inner circle focuses on the question while the outer circle listens until the inner circle passes the text to the outer circle for further discussion.	Minimal	Passages of text and enough classroom space for an inner and outer circle
Talking Sticks	Encourage students to wait for their turn to talk. Only the person holding the stick can talk. This allows each person to have a voice in a discussion.	Minimal	Sticks can be popsicle sticks or are Talking Sticks available for purchase online.

mates to better understand a topic. These strategies include concept maps, fixed/growth mindset paired discussions, gallery walks, infographics, jigsaw activities, poster rotations, sticky note discussions, and think-pair-repair activities.

Two final active learning strategies in Table 2 are Socratic Circles and Talking Sticks. These techniques require pre-service teachers to think independently as well as internalize, listen, and learn

from their peers as they build upon their classmates' contributions within a conversation. The added benefits of these final strategies are that they help ensure that all preservice teachers within the class are given a voice during a discussion.

As indicated above, the blended learning model offers a powerful solution to the limitations of the traditional teaching method. This instructional method enables educators to create a more active and effective learning environment that impacts comprehension and models means by which aspiring special education teachers can design more innovative educational opportunities for their K-12 students, a crucial requirement for 21st-century learners. Another strategy that helps prepare special education preservice teachers for the K-12 classroom is incorporating video analysis in teacher preparation programs. Video analysis is an educational technology tool that offers a range of benefits for teacher supervision and role-play activities.

Video Analysis

Various forms of video recording have been used as effective technology tools in preservice teacher supervision since the 1970s and are considered a promising practice (Nagro & Cornelius, 2013). Video analysis assists with teacher candidates' demonstration of pedagogy, self-reflection, and supervision of field experiences (Ardley & Hallare, 2020; Nagro, 2022; Nagro & Cornelius, 2013; Wilkinson & Potts, 2022).

Video Analysis for Supervision

While video observations occurred before 2020, these were often relied on in teacher preparation program supervision courses during the COVID-19 pandemic. Out of an abundance of caution, university supervisors could not directly observe preservice teachers in their field placements. Many continue to use video observation tools today due to the convenience and learning opportunities. Although tools and features vary, video software applications provide recorded opportunities for preservice teachers to demonstrate instruction and allow supervisors to provide feedback, including successes and needs for improvement (see Table 3). One program, GoReact, can be an effective tool and method of video analysis (Ardley & Hallare, 2020; Hager, 2020).

GoReact is a video-annotated software tool that allows course supervisors to assess preservice teachers using data-driven, video-recorded activities (Ardley & Hallare, 2020). This tool facilitates analysis of preservice teachers' use of targeted teaching skills. These course supervisors can provide timely feedback directly within the recording with a time stamp that easily pauses for discussion. Feedback can be in various formats, including typed annotations, audio or video-recorded responses, links to PDF documents, YouTube videos, or uploaded images. GoReact is a relatively simple tool with a built-in feature that allows supervisors to leave feedback using pre-programmed comment markers (Ardley & Hallare, 2020). These comment markers are frequently used replies that can be inserted into feedback given to preservice teachers along with anecdotal comments. Preservice teachers can easily access this feedback, respond through GoReact, and self-reflect upon their performance. Furthermore, preservice teachers may include a copy of their teaching demonstration in a professional portfolio so prospective principals could review their instruction for employment consideration.

During follow-up meetings with preservice teachers, the instructor may highlight a segment of a preservice teacher's video recording demonstrating a particular effective instructional strategy. The instructor can pause the video at specific points to allow the preservice teacher to narrate or comment, discuss insight into its effectiveness, and how it might be modified to meet various students' needs. As the video plays, the instructor may ask questions and engage the preservice teacher in discussing using a high-leverage practice, evidence-based strategy, or universal design for learning technique and its impact on student learning (Grossman, 2018). Also, with prior permission, a teacher educator can use a preservice teacher's instruction clip during synchronous class time to demonstrate strategies and facilitate conversations. These whole group conversations allow for collaborative learning and peer feedback, as preservice teachers can learn from each other's experiences and perspectives.

Capturing Observations And Collaboratively sHaring Educational Data (COACHED) is a similar video analysis software package developed by researchers at the University of Virginia. Through this program, researchers have demonstrated the timely delivery of targeted feedback in evidence-based practices (Kunemund et al., 2022). Additional tools teacher educators might consider include using a 360° camera, bug-in-ear coaching, and Swivl. Each allows instructors to engage in data-rich introspective exercises that can benefit preservice teachers (Nagro, 2022). Regardless of the tool chosen, university supervisors can use video recordings to create supervision-related learning opportunities, including self-analysis and peer reflection, within a recorded lesson. Cooperating teachers may also find video-recorded lessons helpful when mentoring preservice teachers. The second author received positive preservice teachers' anecdotal feedback

TABLE 3: Video Supervision Tools at a Glance

Technique	Description	Preparation Time	Resources Needed	Approximate Costs
GoReact	Teacher Candidate, supervisor and peers can provide feedback on a recorded video lesson.	Minimal initial training to use; Moderate initial time to create case studies and scripts for role-play.	https://get.goreact.com/; Case Study and role-play materials, self-reflection rubric	**Begins at approximately $62 per user/ per year**
COACHED	Supervisor provides data-rich observation feedback.	Moderate time to become proficient with coding video.	https://www.coached.education.virginia.edu/. Self-reflection rubric	**Free**
Additional Video Supervision Tools to Consider				
360° Camera	This camera allows the user to capture videos in a 360° spherical format around the entire classroom or space.		Multiple models available	**Prices vary based on design**
Distance Bug-in-Ear Coaching	Supervisor can provide immediate coaching from a remote location through a wireless earpiece.		Bluetooth headset and webcam (not a commercial product)	**Prices vary based on design**
Swivl	Teacher places an iPad, camera, or smartphone on a Swivl mount and uses the remote-control marker to track and record the moving person.		https://www.swivl.com/	**Prices vary based on design**

on using video analysis in supervision. Preservice teachers reported that video recordings were less stressful because they were teaching to a camera instead of directly to a course supervisor. In addition to video analysis for supervision, video recordings can be used in role-play activities to enhance the learning experience of preservice teachers.

Video Analysis in Role-Play Activities

Video recordings can extend preservice teachers' learning during such activities as mock parent-teacher or student conference meetings (Nagro & Cornelius, 2013). In these situations, preservice teachers role-play various attendees within the meeting, and the activity is video recorded so preservice teachers can revisit and reflect on the experience. Specifically, mock IEP meetings can be recorded to allow preservice teachers to reflect upon their rehearsal of the skills needed to manage integral components. These recordings might include any portion of an IEP meeting, such as the collaboration and communication discussions between and among the attendees, the delivery of assessments and evaluations, the creation of IEP goals, the determination of appropriate accommodations or modifications, the incorporation of specially designed instruction, services, and supports, or advocation for the inclusion or exclusion of requested services. By video recording the event, preservice teachers can self-reflect upon their performance more effectively than relying on their recollection or taking the words of others present (Nagro, 2022; Nagro & Cornelius, 2013). This reflection allows teacher candidates to identify their strengths and areas for growth (Nagro, 2022; Wilkinson & Potts, 2022). Preservice teachers can assess their ability to communicate effectively with students, parents, and other committee members. Video recordings also allow

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preservice teachers to increase their awareness of nonverbal cues that might not have been noticed during the activity. Additionally, preservice teachers can watch the recording from others' perspectives which can help them recognize the diverse perspectives of committee members, such as recognizing potential barriers to effective communication as IEP meetings are often filled with formal education terminology required by federal law (e.g., IDEA, 2004). This experience can help preservice teachers understand how information may be received from people with various perspectives and help develop empathy for others in attendance. Video-recorded opportunities allow preservice teachers to contemplate and improve valuable communication skills they will need later when engaging with students, parents, and other professionals, which can also help lessen their anxiety and boost confidence when facing these job responsibilities. The second author experienced success with group projects in which preservice teachers assume an assigned role at an IEP meeting and record the skit within GoReact for peer feedback. Anecdotally, preservice teachers reported that the discussion during the debrief of this activity enhanced their understanding of legal requirements, family cultural impact, conflict resolution, and ways to respond to unexpected topics that IEP team members face in meetings.

In these meetings, special education teachers have to communicate technical information about students and their learning and are also expected to simultaneously manage the group dynamic, which can be highly emotional for parents, teachers, and administrators. The video role-playing activity enables preservice teachers to apply and demonstrate their culmination of knowledge about the legal requirements of an IEP meeting and the IEP document with the technical aspect of using tools such as IEP software or forms. These role-plays highlight the dilemmas that may derive during IEP meetings if the content knowledge, emotions, technical steps, and technical aspects of complicated meetings are not successfully managed. Navigating these dilemmas in the lower-stakes atmosphere of class activities, whether face-to-face video recording or in a virtual environment, assists teacher candidates' preparation, self-efficacy, and career readiness.

CONCLUSION

In order to provide preservice special education teachers with the tools to best educate their future K-12 students with disabilities, teacher educators must go beyond traditional methods of instruction. Through the blended learning approach, course instructors can introduce material typically taught during teacher-led instruction by using technology-based assignments embedded with rigorous accountability measures. Teachers have additional time to incorporate active learning techniques by introducing content before synchronous class time. These techniques serve many purposes, including creating a student-centered classroom, presenting information in multiple ways to benefit students who learn differently, and helping preservice teachers develop critical thinking and problem-solving skills. These activities also allow teacher educators to model the implementation of active learning techniques that preservice special education teachers will need to master in order to be successful educators. This is critical as these future educators must work diligently to motivate and impact their K-12 student's performance. Likewise, these strategies help to prepare preservice teachers for the

diverse and ever-changing demands of the modern classroom. As the field of education continues to evolve, teacher preparation programs must continue to explore new and innovative approaches for training the next generation of educators. Most importantly, when special education teachers feel better prepared to meet their job expectations, they may choose to stay in the classroom, directly impacting teacher retention rates.

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Forging Partnerships to Address Teacher Shortages in Rural Settings: Engaging Key Players

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Journal of Special Education Preparation
3(1), 56-66

DOI: 10.33043/JOSEP.3.1.56-66
openjournals.bsu.edu/JOSEP

ABSTRACT

Discussing the topic of special education teacher shortages across the United States has become commonplace. Although more widespread, special education teacher shortages in rural areas have gained less attention. Teachers in these areas face unique challenges such as overcoming geographic barriers to providing high-quality services, the isolation endemic to rural poverty, and having limited access to resources in schools. Additionally, students with disabilities living in rural areas are more likely to be supported by teachers who are ill-prepared, lack experience, and/or fail to possess the qualifications necessary to meet diverse learning needs. Addressing these challenges requires innovative partnerships between national, state, and university personnel to create systemic change to recruit and retain special educators. The purpose of this article is to describe a partnership between The Collaboration for Effective Educator Development, Accountability, and Reform (CEEDAR) Center, the Mississippi Department of Education (MDE), Education Preparation Programs (EPPs), including Delta State University, and a cross-section of special education directors in the Mississippi Delta and other regions that utilized The Educator Shortages in Special Education Toolkit (Hayes et al., 2019) as a guide, which resulted in the development of the Special Educator Mentoring Framework. This article will explore the Special Educator Mentoring Framework that engaged stakeholders in purposeful activities through the four-step cyclical process to plan, design, implement, and evaluate efforts to address the special educator shortages in rural regions of Mississippi. This unique collaboration highlights promising practices to promote special education teacher preparation and strengthen teaching practice.

KEYWORDS

Educator preparation programs, partnerships, rural areas, special education

The special education teacher (SET) shortage has garnered national attention for decades. Recently, due to the COVID-19 pandemic, which mandated public-school closures in the spring of 2020, teacher attrition rates continued to increase (Jameson et al., 2020). Prior to the pandemic, roughly 42% of certified SETs in rural districts reported that they would leave their positions in the next five years due to stress and burnout (Berry et al., 2011). Furthermore, approximately 13% of SETs in rural districts held provisionary or emergency licenses. They also had a higher likelihood of leaving the profession (Berry et al., 2011; Billingsley, 2004). While post-pandemic impact on SET attrition is being uncovered, it is apparent that many stakeholders were unprepared to support SETs to provide adequate services to students with disabilities in rural settings even prior to 2020 (Ault et al., 2020). Therefore, without swift intervention, students with disabilities in rural areas are at greater risk of receiving low-quality instruction from underprepared and underqualified SETs, which could negatively impact student outcomes (Rock et al., 2016).

On average, SETs exit the field within the first 3-5 years, presenting a turn-

over rate that is greater than that of general education teachers, further exacerbating the shortage of SETs (DeAngelis & Presley, 2011; Gilmour & Wehby, 2020; Ingersoll, 2001). The contributing factors of SET attrition include: (a) special education teacher characteristics (Billingsley, 2004); (b) special education teacher preparation (Billingsley, 2005; Connelly & Graham, 2009); (c) school characteristics (Billingsley, 2004; Billingsley, 2007); and (d) working conditions (Albrecht et al., 2009; Berry, 2012; Bettini et al., 2017; Carver-Thomas & Darling Hammond, 2017). For SETs serving rural communities, these factors are often compounded by unique challenges, such as overcoming geographic barriers, poverty, and limited resources (Barrett, 2015; Boe et al., 2013; Fall & Billingsley, 2011; Rude & Miller, 2018). Regardless of the causes of attrition, it prohibits educational equity for students with disabilities (Mason-Williams, 2015).

Although there has been an increase in understanding of the causes of attrition among SETs, minimal progress has been made in alleviating the problem (Billingsley & Bettini, 2019).

According to Kamman and Long (2010), greater attention is now being given to the induction process for SETs as a method to address concerns regarding burnout, teacher quality, and attrition. Although induction has been a visible focus in the literature for general education teachers (e.g., Ronfeldt & McQueen, 2017; Strong, 2005), less attention has been given to the complex and multifaceted roles of special education teachers and their processes of induction (Youngs et al., 2011). Research on stressors and supports that influence SET induction should be centered around the complexities of SET daily experiences that are specific to the roles and responsibilities related to special education (Chapman et al., 2021; Mathews et al., 2017).

> Addressing the shortage requires careful attention to all aspects of the special educator career continuum while also acknowledging the role of context and demographics.

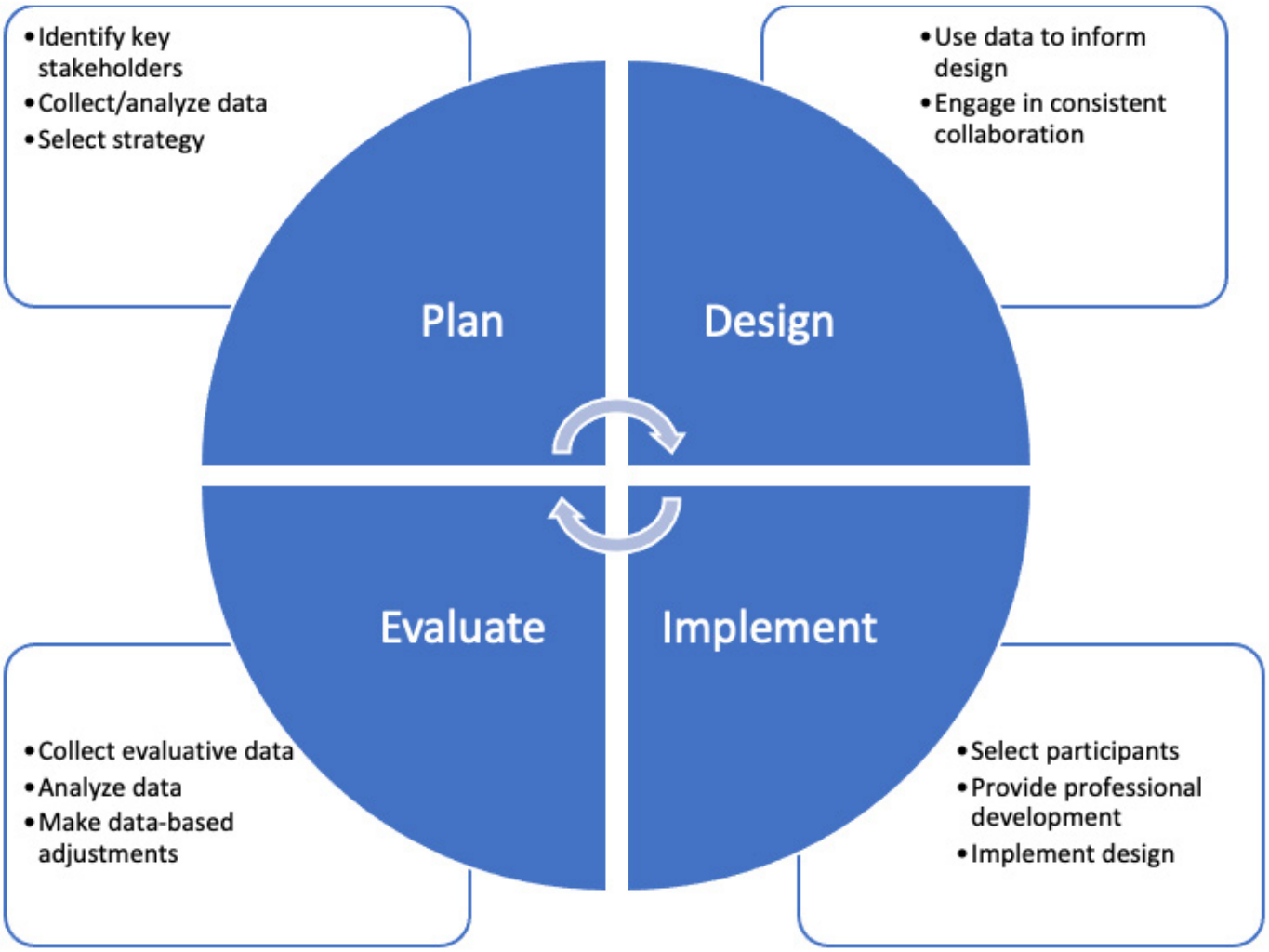
The Landscape of SET Shortages in Mississippi

Historically, the national shortage of special educators has caused a negative impact across all students with disabilities, yet students in rural regions have borne a heavier burden of the negative impact (Mitchem et al., 2000; Rude & Miller, 2018). Mississippi, an agrarian state with a large number of rural communities, has an estimated population of 2,959,473 people. Fifty-one percent of Mississippi's total population resides in a rural area, giving Mississippi the 4th largest rural population in the US (United States Department of Agriculture-Economic Research Service [USDA-ERS], 2022). According to USDA, rural areas consist of open countryside with population densities less than 500 people per mile and areas with fewer than 2,500 inhabitants (USDA, 2019).

As such, over half of the state's schools are considered rural (Showalter et al., 2017) and special educator shortages are especially impactful. Although some rural regions in northeast Mississippi boast a wealth of educational resources, most rural communities in the Delta struggle to provide adequate learning facilities and personnel. Thus, Mississippi has not been immune to the problem of teacher shortages and currently faces a critical lack of SETs. According to data collected by the Mississippi Department of Education (MDE), in the 2021-2022 school year, there were over 677 special educator vacancies, with 189 positions still unfilled by the first day of school (MDE, 2022). Furthermore, this number was an increase from the year prior, in which 146 SET positions remained unfilled at the start of the 2020-2021 school year (MDE, 2021). Interestingly, the number of licensed SETs in Mississippi has increased by almost 30% over the past three years, from 4,355 in the 2019-2020 school year to 5,604 in the 2021-2022 school year (MDE, 2020; 2022). Despite the increase in licensed SETs, persistent shortages of SETs remain across Mississippi schools, a phenomenon which suggests that school districts across the state are struggling to retain SETs. One strategy to support retention of SETs is purposefully designed, targeted, and ongoing induction and mentorship (Billingsley & Bettini, 2019).

Research on the retention of general education teachers has long demonstrated that mentorship is a key component of an effective process of induction and retention (e.g., Guarino et al., 2006; Ingersoll & Strong, 2011). However, less evidence is available to demonstrate a relationship between mentorship and SET retention (Billingsley & Bettini, 2019; Billingsley, 2004). Research has demonstrated induction programs for SETs typically include a formal mentorship component (Billingsley et al., 2019), and

FIGURE 1: Process Graphic



whenever possible, SETs have similar teaching assignments to their mentors (Billingsley et al., 2009; Cornelius et al., 2020). Moreover, mentoring is meant to provide professional guidance (e.g., instructional and procedural support, materials, resources) and emotional support (e.g., understanding, guidance, stress management), (Israel et al., 2014). For SETs in rural districts, mentorship and collegial support have been shown to be major predictors of SETs staying after their first year (Buchanan et al., 2013). According to Ortogero and colleagues (2022), relationships with colleagues and students were factors directly related to rural SETs burnout, as SETs who experienced less social networking and support, were more likely to burnout (Garwood et al., 2018). While literature related to special education induction and mentoring is expanding, little is known about building collaborative partnerships between state, local education agencies, and technical assistance centers to support SET induction and mentoring to increase retention efforts in rural communities. Therefore, acknowledging the unique rural settings that represent challenges with preparing, attracting, and especially retaining certified special educators, Mississippi insightfully embarked on a collaborative partnership that would include essential stakeholders.

Initial Collaborative Process

The special education shortage in Mississippi is compounded by a complex network of interdependent relationships between rural contexts and special educator preparation and career readiness. Addressing the shortage requires careful attention to all aspects of the special educator career continuum while also acknowledging the role of context and demographics. Consequently, this endeavor necessitated an evidence-based process that would address the shortage at the contextual

level. The Collaboration for Effective Educator Development, Accountability, and Reform (CEEDAR) Center, an Office of Special Programs (OSEP) funded technical assistance project based out of the University of Florida, was instrumental in establishing a collaborative partnership involving Education Preparation Programs (EPPs), Mississippi Department of Education (MDE), and Local Education Agencies (LEAs). The mission of the CEEDAR Center is to: support students with disabilities in achieving college and career ready standards by building the capacity of state personnel preparation systems to prepare teachers and leaders to implement evidence-based practices within multi-tiered systems of support. (CEEDAR Center, 2020)

Thus, the collaborative effort between the CEEDAR Center and key stakeholders in Mississippi, provided the foundation to adapt an evidence-based framework for effectively addressing the contextual nuances presented by special educator shortages in rural regions. Visit https://ceedar.education.ufl.edu/shortage-toolkit/ to view information on the Mississippi Special Education Teacher Shortage Pilot Process.

Using the Educator Shortages in Special Education Toolkit (Hayes et al., 2019) process as a guide, the Teacher Shortages Workgroup, which consisted of representatives from CEEDAR Center, EPPs, representatives from multiple offices at the MDE, special education directors from several LEAs, and a representative from a regional education service agency (RESA), developed a framework for approaching the multi-dimensional work of addressing the shortage. As noted in Figure 1, the Special Educator Mentoring Framework suggested a cyclical process to engage stakeholders in purposeful activities to plan, design, implement, and evaluate efforts to address the special educator shortages in rural regions of Mississippi.

Plan

Following the collaborative process outlined by the Educator Shortages in Special Education Toolkit (Hayes et al., 2019), the first step was to intentionally identify and engage key players who had intimate knowledge of special education needs in rural schools and who were positioned to directly impact efforts to address the special education teacher shortage.

The state's CEEDAR Collaborative, which included CEEDAR representatives, representatives from multiple offices at MDE, EPPs, administrators and teachers from several LEAs, and a representative from a RESA, provided a core of valuable expertise. Though the CEEDAR Collaborative convened periodically to address state goals, it was evident a work group was needed to focus specifically on the special educator shortage. The Teacher Shortages Workgroup was developed to glean from the expertise of the CEEDAR Collaborative. The workgroup benefitted from a current *in the trenches* view of the special educator career continuum as it played out on a daily basis. The intent was to include special education directors from various districts and regions in Mississippi to reflect the state's unique needs resulting from its geographical and racial diversity.

The Teacher Shortages Workgroup met bi-weekly virtually during the 2020-2021 school year and followed the guidance of the Educator Shortages in Special Education Toolkit (Hayes et al., 2019) to address the state's special educator shortages. Key to the workgroup was establishing a true collaborative representing a common vision and collective effort for developing measures to address the shortage. All members of the workgroup contributed expertise and were given equal leverage throughout the process. This was reinforced by anecdotal survey data from special education directors who identified the *collaboration of all partners* was critical in the selection of the strategy, development of the process to implement the mentoring pilot program, and the development of the content used in the mentoring pilot program.

The next step included the collection and examination of state and local data that would inform measures for addressing the state's shortages. Data concerning all levels of the pipeline, as well as the full spectrum of the special educator career, were reviewed. Data for the 2018-2019 school term indicated 11 colleges and universities produced 135 certified special educators (MDE, 2019). However, the pipeline was insufficient to supply the 221 special educators needed to fill the state's vacant positions during the 2019-2020 school year. There were 16,544 educators in Mississippi who were licensed to teach special education; however, only 4,355 fully licensed special educators were in practice. Additional data were collected to represent perceptions of teachers at the local level who were leaving their positions as special educators (MDE, 2021). The data revealed deficits in both the state's special educator pipeline and career continuum, with 74% of teachers reporting that additional professional development and supports would have encouraged them to stay in their position. However, within the career continuum, with less than 25% of licensed special educators in the classrooms, the inability to retain special educators presented the greatest challenge to the state's ability to provide adequate learning experiences for students with disabilities.

Keeping the data in mind, the workgroup then used the Educator Shortages in Special Education Toolkit's (Hayes et al., 2019) resources to discuss and rate possible strategies for addressing the shortage. Crucial to this phase of the process was identifying a measure that would address the shortage in the short term while also building a foundation for long-term impact. The diversity of the work group was critical to this phase as each member held a unique perspective of the shortage and its impact on students with special needs. The varied perspectives were used to consider the impact of suggested strategies. The outcome of this phase was the discovery that effective mentoring and induction programs were missing elements in the career continuum across varied contexts within the state. Since affecting immediate and sustained change in the historically insufficient special education teacher population would have both short-term and long-term effects (Feng & Sass, 2015), developing and implementing a well-informed Mentoring and Induction Pilot Program was a viable solution for addressing the state's shortages across various settings.

Design

After the Teacher Shortages Workgroup identified the Mentoring and Induction Pilot Program as the retention strategy to implement, the group carefully designed the mentoring program to promote successful implementation and provide the best chance for favorable outcomes (see Billingsley et al., 2009; Desimone et al., 2014; Ingersoll & Strong, 2011). The Teacher Shortages Workgroup then met virtually on a bi-weekly basis throughout the 2021-2022 school year to discuss program implementation and offer guidance. Key components of the program included professional learning and ongoing support for mentors, administrators, and SETs within their first or second year and a community of practice for SETs in their third year of experience (Bettini et al., 2017). All professional learning throughout the school year included the Council for Exceptional Children and CEEDAR Center's High Leverage Practices (HLPs) in Special Education, and professional learning was aligned each month so all stakeholder groups focused on the same HLP.

Mentor Professional Learning and Ongoing Support

LEAs selected mentors to participate in the program using mentor selection guidance provided by the Teacher Shortages Workgroup. The majority of the mentors selected were full-time SETs with at least three years of special education experience; however, two LEAs selected mentors who were serving as district-level case managers. Research has shown that providing mentors with professional development prior to mentorship is a critical component of effective induction practices (Cornelius et al., 2020; Marshall et al., 2013). For this reason, prior to the start of the school year, all mentors attended Mentor Boot Camp, an intense, two-day training focused on mentoring skills and HLPs. The HLPs used for the training were previously identified by the state's CEEDAR Collaborative, which engaged in a q-sort process to identify six HLPs for initial statewide implementation. Members were asked to independently rank the *five most important HLPs to leverage instructional effectiveness*. Then, these rankings were compared across the group to identify the top six HLPs as the state's initial focus. These six HLPs were then incorporated into the professional learning for mentors, new SETs, and administrators.

The Mentor Boot Camp was facilitated by the Mentoring and Induction Pilot Program Project Director and an adjunct instructor from the University of Mississippi. The Mentor Boot Camp embedded the study of three main resources throughout: both the mentoring and induction manuals published by the National Center to Inform Policy and Practice in Special Education (Kamman et al., 2013a; Kamman et al., 2013b), and the Council for Exceptional Children's and CEEDAR Center's HLPs in Special Education publication. A focus HLP was selected for each month, and professional learning was designed monthly to ensure mentors knew key components of implementing the HLP. Mentors participated virtually in monthly check-ins lasting an hour, during which mentors discussed celebrations, challenges, the focus HLP, mentor requirements, and any support needed.

Mentor Compensation. Mentors were compensated by MDE for their services at a rate of $1,500 per mentee (i.e., novice SETs) for the school year if all mentor requirements were met, including attending monthly mentor check-ins and completing mentor logs to document the services provided. Mentors were expected to observe mentees, with no minimum number of observations set, and these observations were expected to be documented along with other mentor services. Special education directors verified each mentor's eligibility for compensation and submitted verification of eligibility for payment.

Implement

Novice Special Education Teacher Professional Learning and Ongoing Support

Novice special education teachers were provided consistent monthly

FIGURE 2

August 2021 Principal Update

Helping Your New Special Educators Connect Professional Learning to Professional Practice

On August 19, 2021, from 2 PM until 4 PM, the first virtual professional learning event was held via Zoom with your first- and second-year special education teachers. Information about the event is below.

Professional Learning Focus

HLP #7: Establish a consistent, organized, and respectful learning environment.

Topics explored and discussed included the following:

- Establishing learning environments and positive relationships
- Culturally responsive teaching
- Developing and explicitly teaching expectations and procedures
- Specific feedback
- Opportunities to respond (OTRs)

Follow-up

Next steps:

1. Visit the new special education teacher's classroom and informally check-in with her/him to see how s/he went about establishing a positive learning environment.
2. Praise any OTRs you see happening in the teacher's classroom.
3. Check-in with your mentors to be sure they have been able to organize a time for their mentees to observe a veteran teacher who has mastered (all or elements of) HLP #7, specifically a teacher who effectively has established and implements routines and procedures and who often provides specific performance feedback to students.
4. Check-in with mentors to be sure they have been able to meet/communicate with their mentees.
5. Conduct a drop-in observation. Connections to the PGS Special Education Teacher Growth Rubric: HLP #7 can be observed in (and you can collect evidence to support) standard 3, standard 4, standard 5, standard 6, & standard 7.
6. Ensure new special educators (and mentors, if possible) prepare to participate in the next session on September 15, 2021, from 2 PM until 4 PM.

Professional Learning Resources

PowerPoint Presentation
Opportunities to Respond (OTRs) Tip Sheet
High-Leverage Practices in Special Education

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professional development and support that was specifically targeted to their unique roles and responsibilities. This type of support has proven essential for the professional growth and retention of special education teachers (Ansley et al., 2019; Hughes et al., 2015; Macedonia & Weiss, 2022; Prather-Jones, 2011). Thus, novice SETs received two hours of professional learning each month, focused on the specific HLP for that month, including celebrations and challenges they faced as novice special educators. The sessions were held virtually during the school day. The intent was to develop a community of support and a "safe space" in which novice SETs could professionally grow and seek solutions to challenges they were facing. Novice SETs were eligible to apply for .1 continuing education unit (CEU) for every clock hour that they attended professional learning. These CEUs could be used towards license renewal.

Administrator Professional Learning and Ongoing Support

School administrators play a critical role in providing the necessary supports, including personnel, resources, materials, and training, to maintain and support a competent instructional staff (Cancio et al., 2013; Prather-Jones, 2011). However, the under-preparation of school administrators who support special education programs and special education teachers is well documented in the literature (Angelle & Bilton, 2009; Ball & Green, 2014; McHatton et al., 2010; Wakeman et al., 2006). Therefore, within the Implement process, school and district administrators received a 5-hour in-person training at the beginning of the school year followed by two hours per month of virtual professional learning focused on the HLP of the month, supporting novice SETs, and supporting mentors. Administrators were also emailed the Principal Update (See Figure 2) at the end of each month. This correspondence included: descriptions of the support provided to novice SETs and mentors, suggestions for follow-up with novice SETs and mentors, connections to Mississippi's Special Education Teacher Observation Rubric, and professional learning resources.

FIGURE 3

Month	Topic(s)	HLP
August	Classroom setup	#7: Establish a consistent, organized, and respectful learning environment
September	Planning for maximum impact	#18: Use strategies to promote active student engagement
October	Providing feedback	#8 & #22: Provide positive and constructive feedback to guide students' learning and behavior
November	Ongoing data collection	#4: Use multiple sources of information to develop a comprehensive understanding of a student's strengths and needs
January	Explicit Instruction	#16: Use explicit instruction
February	Accommodations and modifications	#13: Adapt curriculum materials and tasks
March	IEP development; collaboration with families	#2: Organize and facilitate effective meetings with professionals and families & #11: Identify and prioritize long- and short-term learning goals
April	Supporting student learning	#15: Provide scaffolded supports

Third-Year Special Educator Community of Practice

Third-year SETs in participating LEAs were invited to join a virtual monthly community of practice meeting, which research has shown can increase shared understandings of effective teaching (Bryk, 2009). The community practice meetings focused on targeted HLPs, along with celebrations, challenges, and current topics of interest (e.g., guest speaker from the Mississippi Parent Training and Information Center during the spring semester when so many IEP meetings were being held). The intent was to provide a community of support as well as professional learning regarding HLPs and other relevant topics in the special education field. See Figure 3 for monthly topics and targeted HLP.

Evaluate

Data were collected and shared with the Teacher Shortages Workgroup throughout the first year of the Mentoring and Induction Pilot Program, and workgroup members provided guidance and made recommendations as needed. As members of the Teacher Shortages Workgroup, the special education directors in participating LEAs were key partners in its successful implementation, serving as liaisons between the workgroup and LEAs and providing ongoing input and feedback to the project director. These special

education directors also frequently participated in professional learning provided, presenting content at times and sharing their expertise with novice SETs, mentors, administrators, or third year SETs.

During monthly mentor check-ins and professional learning for novice SETs, administrators, and third year SETs, anecdotal data were collected to document ongoing challenges and celebrations. Additionally, mid-year surveys were administered to novice SETs and mentors to determine if program objectives were being met. Finally, an end-of-year survey was administered to mentors soliciting feedback on support provided to them throughout the first year of implementation. All data were shared regularly with the Teacher Shortages Workgroup, and adjustments were made as a result of stakeholder engagement and input.

Lessons Learned and Recommendations

The Teacher Shortages Workgroup learned many lessons throughout the process of planning, designing, implementing, and evaluating a mentoring framework and provided the following recommendations for other states or LEAs seeking to adopt Mississippi's model. First, engaging key partners to address the special educator shortage requires intentionality. It is critical to include relevant stakeholders via collaborative partnerships throughout the process, including representatives from LEAs, the state education agency, EPPs, and any external partners who can assist the work. Failing to represent all levels of the pipeline, from educator preparation, to certification and licensure, to active school personnel, as well as any assisting entities, resulted in delays in the process. Equally important is the consideration of diverse contexts. Since Mississippi is a diverse, rural state with varied needs, it took time to solicit support from special education directors from school districts in key rural regions.

Second, structure the program and align all professional learning so the focus of the intervention is consistent and clear. Mississippi's Mentoring and Induction Pilot Program included support for mentors, administrators, novice SETs, and third-year SETs and professional learning for all stakeholders in HLPs. By keeping the focus on high-leverage, evidence-based practices and alignment in professional learning, participants learned essential skills to meet the needs of students with disabilities. Further, this learning strengthened the framework and provided clarity of focus.

Additionally, set and clearly communicate minimum expectations for mentees and mentors, and ensure administrators follow up with mentors. In Mississippi's original model, expectations were communicated with mentees and mentors, but clear minimum requirements were not set or communicated. For example, novice SETs were expected to meet with mentors, identify specific *look-fors* (i.e., observable teacher behaviors) related to the focus HLP for the month, and then observe another teacher whose pedagogy reflects mastery of the focus HLP. Mentors were then expected to debrief with their mentees, discuss how to incorporate elements of the HLP into the mentee's professional practice, and set a date for the mentor to observe the HLP in action in the mentee's practice. After the mentor observed the mentee, the mentor was expected to lead a feedback conversation about the observation. The Teacher Shortages Workgroup expected this process to occur monthly. However, the failure to establish a minimum requirement, along with other challenges such as COVID-19 and substitute shortages, resulted in few observations taking place and inconsistent mentoring services being provided. Finally, discuss the mentoring and induction program requirements at the beginning of the school year with all participating stakeholder groups to ensure all stakeholders understand the purpose, focus, expectations, and requirements

TABLE 1: Recommendations for Practice

Targeted Recommendation
Identify and engage key partners who represent all aspects of the special educator pipeline and career continuum.
Solicit partners that represent the varied regional contexts impacted by the shortages.
Identify a clear focus for the intervention.
Align all professional learning to address the agreed-upon focus.
Set minimum expectations for mentees, mentors, and administrators.
Ensure administrators follow up with mentors.
Discuss the mentoring and induction program requirements at the beginning of the school year with all stakeholders.

of the program. The aforementioned recommendations are included in Table 1.

CONCLUSION

As documented by survey responses, novice SETs in the Mississippi Mentoring and Induction Pilot Program found the program valuable to their practice. One novice SET added, "I feel that I have been able to provide clearer, more helpful feedback to my students" (anonymous). This response from survey items is just one that demonstrates how SETs felt the induction and mentoring program supported their practices. Although there were some challenges, such as time for mentors to observe mentees, overall, participants felt the program was a success. SETs reported feeling supported from their participation in this program, and mentors enjoyed working with the novice teachers.

SETs working in rural areas face unique challenges, and the SETs from rural areas who participated in our pilot program were no exception. These teachers were often the only special educator within their school building and thus were missing the social-emotional supports of critical collegial friendships with other SETs that benefit SETs in urban and suburban schools (Rude & Miller, 2018; Sindelar et al., 2018). These collegial relationships among educators within the same disciplines is a necessary component to successful induction and mentoring (Sindelar et al., 2018), as teachers can receive professional development and social-emotional supports uniquely tailored to their needs.

Rude and Miller (2018) state local school districts, educator preparation programs, and policy makers must be creative to develop solutions to SET retention. Therefore, to develop and implement this robust program to ensure SETs in varied school settings across Mississippi, particularly those in rural communities, received mentoring and induction supports with other SETs that support their needs, the pilot program required strong and varied collaborative partnerships. If district or state leaders are interested in implementing an induction and mentoring program, it is highly recommended they first seek out and develop relationships with relevant stakeholders to help support the development and implementation of a program (Rude & Miller, 2018). The shortage of special education teachers has persisted for decades, but it can be addressed. A strong, ongoing induction and mentoring program can be one tool district leaders can implement to help alleviate SET shortages and prevent teacher attrition.

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Addressing Attrition: Multi-Level Mentorship Model

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Journal of Special Education Preparation
3(1), 68-75

DOI: 10.33043/JOSEP.3.1.68-75
openjournals.bsu.edu/JOSEP

ABSTRACT

Mentorship has been identified as a protective factor in early career special education teacher retention. These mentorships can be formal or informal during teachers' first years of teaching and can support teachers in various aspects of their careers, such as navigating required paperwork and instructional practices. However, these mentorships should be individualized and consistently provided to be meaningful. To address the inconsistent mentorships that early career teachers may receive, we propose a model in which early career teachers are supported by a network of alumni to both support and retain the early career special education teaching force. In turn, the alumni are supported by university faculty in mentorship skills to fill gaps in administrative roles where special education expertise is needed. By providing support to both groups of special educators (e.g., early career, mid to late career), we hope to address the shortage of special educators by improving attrition rates of early career special educators while concurrently encouraging and promoting leadership roles for in-service special educators, filling the critical need of administrators with special education expertise.

KEYWORDS

alumni, attrition, mentorship, special education teacher

Various factors can impact early career special educators' retention and attrition, including their working conditions, relationships, and initial preparations (Bettini et al., 2020; Conley & You, 2017; Helms-Lorenz et al., 2016). One of the protective factors in teacher retention is mentorship. These mentorships can be formal or informal during special educators' first years of teaching and support the teachers in various aspects of their careers, such as navigating the paperwork (e.g., IEPs, assessments), instructional practices (e.g., behavioral and classroom management, curriculum), and collaborating with school personnel (e.g., classroom assistants, related service providers) (Billingsley & Bettini, 2019; Hagaman & Casey, 2018). While the literature acknowledges the multifaceted and bi-directional benefits of mentorship, we aim to maximize the outcomes of mentor/mentee relationships by proposing a multi-level mentorship model in which universities work with local schools and their community to support and continuously evaluate intentionally curated mentorship dyads.

Types of Mentorship Support

Mentors can provide formal and/or informal mentorships (Sikma, 2019; Sutcher et al., 2019). Literature on mentorship for early career teachers has identified five types of support: 1) emotional support, 2) contextual support, 3) academic support, 4) social support, and 5) relational support (Sikma, 2019). Emotional support is most prioritized and sought by early career teachers. This type of support involves an identified trusted individual who the early career

teacher can "vent" to at the end of the day. This can include supporting early career teachers in their interpersonal or personal struggles (e.g., family, health, etc.). Contextual support includes more context- and institutional-specific information (e.g., paperwork, personnel who are or are not helpful) is beneficial to navigating their work environment more efficiently. Academic support includes curriculum or instruction-related supports. Social support includes informal social interactions such as meetings to check in on the mentee's day or participation in non-school related activities. Lastly, relational support involves identifying individuals who would most likely relate to the mentee's feelings and experiences, such as introduction to other early career teachers at other schools. Depending on the individual teacher, the support type and frequency can vary.

In many formal mentorships, veteran teachers are assigned to early career teachers to provide support (Carver & Feiman-Nemser, 2009). The assigned mentor is recommended to be in the same field and specialization as the mentee. Still, in practice, formal mentors provided by school districts may often not be trained or teach in the same specialization as the mentees (Irinaga-Bistolas et al., 2007; Sutcher et al., 2019). Frequently, informal mentorships are sought out by mentees for unmet needs or to complement formal mentorship (Desimone et al., 2014; Feiman-Nemser, 2003; Pogodzinski et al., 2012). These informal mentorships are often professional connections with other teachers or involve participation within an external network of teachers (i.e., professional learning communities) that support the learning of the social processes to acclimate to a new institutional environment, such as learning the institutional values, expected behaviors, and social knowledge necessary to function in their roles within the organization (e.g., Desimone et al., 2014). Both formal and informal mentorships are critical to early career teachers' retention in the field as it powerfully impacts a teacher's well-being (Kutsyuruba et al., 2019). Each type of mentorship is advantageous, and having both provides more individualized and comprehensive support for early career teachers. Furthermore, having these professional relationships can also positively affect early career teachers' self-efficacy in teaching practices and overall sense of belonging (Andrews & Quinn, 2005; Gebbie et al., 2012; Waddell, 2007).

> The proposed model capitalizes on the resources of the university and the relationships with school districts to support special educators in their first years of teaching. The model also supports mid- and late-career alumni teacher retention by providing new learning and leadership opportunities.

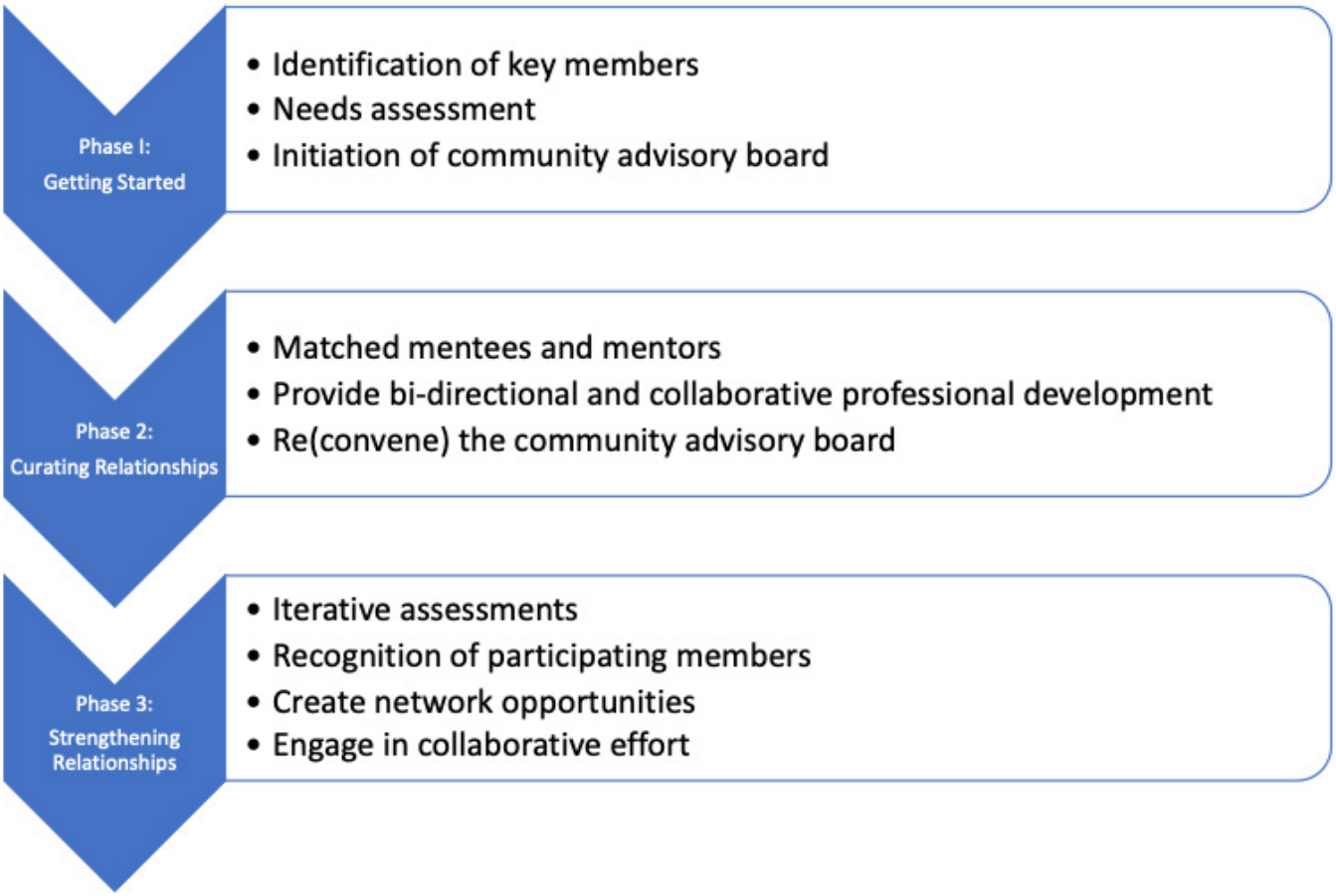
Mentors are more than "cheerleaders" and provide more support than basic tips and survival strategies (Stanulis et al., 2019). As aforementioned, mentors can formally and informally support early career teachers in various aspects of their professional lives. Effective mentors often support their mentees in a structured way and actively listen, problem-solve, and provide specific, targeted feedback in a safe, non-evaluative environment (Gist et al., 2021; Stanulis et al., 2019). Skills required of mentors are learned over time and require practice and guidance. Mentor teachers, particularly those assigned a more formal mentorship role, are often experienced and can provide the institutional and specialization knowledge and expertise early career special educators need to be successful in the new teaching environment, but may need more specific training and professional development to mentor adult learners (Ellis et al., 2020; Gakonga, 2019; Parker et al., 2021). Universities and school district partners can collaborate in professional development to prepare mentor teachers, particularly those with a background in special education and research-based mentoring practices (e.g., Cornelius et al., 2020). These collaboration efforts not only can increase the number of qualified mentor teachers, but it is also an investment in the next generation of administration leaders with expertise in special education (DeMatthews et al., 2020).

Theoretical Framework

Social Constructivism

The Theory of Social Constructivism (Vygotsky & Cole, 1978) posits that social interactions are the basis of knowledge sharing and acquisition; learning is an interactive and collaborative endeavor that is context-specific, and individuals are active players in their learning. In the case of a veteran teacher as a mentor to an early career special educator, the school site and expectations of a teacher within is the context; the veteran teacher,

FIGURE 1: Model Phases



through mentorship - a social exchange of ideas- imparts valuable knowledge about the school context to enable the new teacher access to a hidden curriculum at a particular school site (e.g., working with administration, families, and the community; hierarchical and lateral relationships).

Social Learning Theory

Social Learning Theory (Bandura & Walters, 1977) posits that learning occurs through modeling, observing, and imitating behavior. This suggests that one with more experience and knowledge in each situation is better positioned, via social learning theory, to mentor someone new to the situation. A mentor teacher is often in a position where their behaviors in the school setting are observed and imitated by mentees. Further, for mentors who have shown workplace success (e.g., classroom management, collaboration with school personnel and related service providers), others often imitate their social and professional behaviors.

Together, social constructivism and social learning theories provide a strong foundation for the mentor/mentee relationship given that the intentional selection of dyads is valued, and training is provided to all participating members, including the mentors and relevant school personnel and leadership to promote and ensure collaboration among members at every level.

MULTI-LEVEL MENTORSHIP MODEL

Qualified mentor teachers are instrumental in the training and retention of early career teachers. Effective, intentional mentorship requires the dedication of mentors' time, expertise, and willingness to support early career teachers (Ronfeldt et al., 2018). The time commitment and the emotion-intensive needs of early career teachers present a challenge in finding qualified and willing mentor teachers (Hoffman et al., 2015). One viable option in increasing qualified mentor teachers is to recruit, invest, and train program alumni whose teaching and experiential methods align with a shared mission, values, and beliefs of the university and districts in which they teach.

To support and retain early career special educators, a mentorship model that strengthens the capacity building of the programs' alumni network is proposed. Localized and targeted mentorship opportunities between program

alumni and recent graduates can create dyads with shared pre-service programmatic experiences. This can be the first step in finding common ground and forming meaningful personal/professional relationships. Further, strategic matching of dyads would yield other shared experiences, such as similar administrative and structural experience (e.g., school district, curriculum) and community and student demographics (e.g., Title I schools, inclusion). The shared experiences are valuable for a mentor/mentee relationship as it allows the mentor insight into the mentee's experience for targeted mentorship. Teacher attrition may be mitigated by cultivating the mentor/mentee relationship and creating the basis for strong professional and interpersonal relationships (Hasselquist & Graves, 2020; Waddell, 2010).

The proposed model capitalizes on the resources of the university and the relationships with school districts to support special educators in their first years of teaching. The model also supports mid- and late-career alumni teacher retention by providing new learning and leadership opportunities. To build the alumni network, the proposed model requires the commitment and dedication of community partners, including universities, local school districts, and program alumni mentor teachers. In the sections below, recommendations for implementation are provided.

Phase 1: Getting Started

Prior to the implementation of the model, community partners are identified. Determination includes an interest in the model, willingness to be part of the continuous evaluation of the model, and openness to ongoing shifts based on identified needs. Additionally, needs assessments are conducted with all participating members. The needs assessment will be developed and tailored to specific groups (e.g., Sawatzky & Enns, 2009).

Identification of key members. A small group of interested, committed, and dedicated members of the proposed model will be identified at the initial stage of implementation. Members will include university members (e.g., administrators, faculty, staff), school administrators and personnel, alumni mentor teachers, and soon-to-be graduates of a pre-service program and early career mentees.

University members should be willing to be the point of contact in communicating and developing relationships with school districts, alumni mentor teachers, and early career teachers. School administrators and personnel members should also be a small, committed group who have self-selected to be part of this project. Alumni mentor teachers would be identified through recommendations from faculty, school districts, and other qualified mentor teachers in the field. Recommended mentor teachers would be provided with clear expectations of a mentor (e.g., topics that a mentor may advise, time requirements) before they commit themselves to the role of a mentor. Lastly, early career teachers would be identified through an alumni listserv of the university program.

Needs assessment. All groups would conduct an internal needs assessment to evaluate the strengths and needs of their programs and/or institutions (e.g., Sawatzky & Enns, 2009). For example, the university needs assessment would include evaluations of coursework and clinical practice that would directly impact early career teachers' preparation in their first years of teaching. It would also include identifying points in the program where mentorship was provided, by whom, and whether additional support may be necessary. Similarly, school districts would conduct needs assessments to evaluate current practices and expectations of early career special educators at their sites to determine if additional training is needed for identified mentors.

Initiation of a community advisory board. A community advisory board comprised of the community partners involved in this mentorship model, including university members, school administrators, and alumni mentor teachers, would be initiated at this implementation stage.

Phase 2: Curating Relationships

Relationship building and communication are critical to the implementation of the model. At the initial stage of the model, a small, dedicated team is identified from all participating parties. Team membership is selected based on self-nominations and referrals. Final membership is determined by members' interest, availability, and shared understanding of program goals and needs. Subsequently, during Phase 2, relationships are cultivated (in the case of the mentee/mentor matching) and curated.

"Match" mentees and mentors. Mentor/mentee matching should be strategic and individualized. In practice, mentees are often paired with available mentors; however, considerations such as disposition, cultural background, and experiences (e.g., credential specialization, inclusion) are also important in matching mentees and mentors (Fisher-Ari et al., 2019; Sutcher et al., 2019).

Provide bi-directional and collaborative professional development. Leadership capacity building professional development opportunities should be provided to mentor teachers by qualified university faculty and school district leadership. Results from the needs assessments would be used

to inform the topics of the professional development offered. By approaching mentorship skills through the lens of the university and district partners, mentors will be better positioned to understand the needs of and work with early career special educator mentees. In addition to collaborative professional development sessions, university faculty can provide learning opportunities for district partners, including mentors, on continued learning pathways (e.g., master's degree in educational leadership) and program improvement research methods and scholarship (e.g., joint presentation in professional conferences). District partner personnel, including mentors, can provide professional development sessions for university constituents on topics such as school-based outcomes of current policy and curricular implementation, community-school partnerships, and the benefits and challenges of being a peer mentor. Individualized professional development opportunities will benefit all participating parties, whether it be continuous improvement of school-based practices, service to the community, or individual goal setting for professional growth.

Re(convene) the community advisory board. Advisory board members comprised of university faculty, school district leadership, and alumni mentors would continue to meet on a regular basis to build community and shared vision. District and university members would regularly share professional opportunities to capitalize and leverage on the unique experiences and expertise available from the different institutions (e.g., guest speakers, Career Day participation, joint attendance at community events).

Phase 3: Strengthening Relationships

Regular and open communication is expected to establish the mentorship model. Phase 3 focuses on strengthening the relationships between the different community partners (school districts, alumni teachers, and mentees). Milestones and successes should be recognized and celebrated. Additionally, evaluation is conducted to determine the effectiveness of the model, including the effectiveness of different supports from each community partner (university, school district, alumni mentors) and overall communication among the participating parties.

Iterative assessments. Regular iterative assessments from community members would be conducted for continuous improvement. Data collection would include short-term participant feedback, including time logs of the mentor and mentee, topics of concern addressed, outcomes or actions taken as a result of the mentorship meetings, and a Likert scale rating of the effectiveness of meetings. Long-term data would include retention rates of early career participants, the pursuit of further educational opportunities for the mentors (e.g., admission to a master's program in Educational Leadership), and the number of mentee participants who become mentors. The assessments will also seek to identify the specific and changing needs of community members during each iterative phase.

Recognition of participating members. It is important to recognize and acknowledge the dedication and commitment of the participating members. For school districts, this would be acknowledging key personnel involved in the process, including advisory board membership and participation. For alumni mentor teachers, it would be recognizing their achievements as mentors (e.g., nominations for university-community awards), inviting them to share their mentoring experiences, and to train the next generation of mentors. For mentees, it would be celebrating their successes, including typical school year accomplishments, such as submission of grades, progress reports, and transition IEPs. Attention should also be given to personal achievements such as sustained self-care habits (e.g., yoga) and major life events (e.g., having a child).

Create network opportunities. Networking events, such as alumni mixers, could be co-hosted by universities and school districts to build professional networks. As the number of model participants grows, the university and districts/school personnel can join professional organizations (e.g., Council for Exceptional Children, Teacher Education Division) and attend/present jointly with local and national recognition of their collaborative efforts.

Engage in collaborative efforts. Universities and school districts could co-envision, develop, and implement continuing education, leadership opportunities, and certification programs to advance university alumni in their professional development while strengthening the relationship between the participating members.

Utilize the advisory board. The advisory board members should be utilized effectively to make a high impact, internally and externally (i.e., on their respective campuses and the surrounding community). Their shared experiences and recommendations should be taken under advisement and, more importantly, implemented if possible.

University-School Partnerships: Capacity building and long-term benefits

The benefits of university-school partnerships are well documented in the literature (Burns et al., 2015;

Parsons et al., 2016). The proposed model aims to cultivate a culture of shared responsibility between the university and the local school partners to ultimately "grow your own" alumni network of qualified mentor teachers who are willing to mentor and support the next generation of special educators. More importantly, the model aims to address and counter factors that contribute to early career teacher attrition by having a network of alumni mentors who are willing and can effectively provide mentorship to early career special educators. Specifically, the alumni mentorship model addresses teacher attrition by focusing on three areas that have shown to be protective factors against teacher attrition and job dissatisfaction: 1) increased interpersonal relationships and sense of belonging, 2) greater access to resources, and 3) greater job satisfaction.

Increased Interpersonal Relationships and Sense of Belonging

Interpersonal relationships and sense of belonging are protectors against teacher attrition (Khaleel et al., 2016; Le Cornu, 2013; Shahidan et al., 2016; Skaalvik & Skaalvik, 2011; Zhang et al., 2019). Starting a job in a high stress environment, such as teaching, can be challenging and isolating without guidance or mentorship. The alumni network mentorship model allows early career teachers to access alumni mentors who can support them in various aspects of their new position. For example, mentors can provide contextual support, such as institutional-specific information, to help early career teachers more effectively navigate the new working environment (Sikma, 2019). They can also help early career teachers build meaningful interpersonal relationships with new colleagues (i.e., other teachers, mentor teachers) who have similar goals and ultimately a collaborative community with shared values and goals that can be accessed for informational and material resources. The model presents multiple avenues for increasing a teacher's sense of belonging by creating more individualized professional connections (i.e., mentorship, alumni network) within their school site, university, and larger professional community.

Greater Access to Resources

Teachers, particularly in low-resourced communities, have identified a lack of resources as a significant stressor that leads to job dissatisfaction (Okeke & Mtyuda, 2017; Van der Klink et al., 2017). Resources can include basic needs such as classroom furniture, supplies, and required curricular materials. The model aims to support early career teachers in the acquisition of resources through the mentor/mentee relationship. For example, the developed interpersonal and collaborative relationships among teachers in the alumni network at various levels (e.g., early career, mid- to late-career) can work together to share methods of procuring needed resources. In addition, the alumni of the program often teach within the proximal geographic region of the university, making the physical sharing of resources possible. The community sharing of resources not only addresses the issue of resource allocation and scarcity but also increases the feeling of connectedness to others within the profession and who support the profession.

Greater Job Satisfaction

Job satisfaction is also a protective factor against teacher attrition (Brunsting et al., 2014; Robinson et al., 2019). Locke (1976) defines job satisfaction as a positive emotional response stemming from a person's experience with their work. This broad definition encompasses many aspects of a teacher's work, from in and out of the classroom to personal and academic. For example, being current on the constant changes in state and federal mandates in education can be overwhelming for early career teachers and, concurrently, may become aggravatingly routine for veteran teachers. The proposed model and recommendations provide both new and veteran teachers an option to access an alumni network of support for their specific needs, which are addressed through continuous needs assessments built into the model.

For veteran teachers, mentorship opportunities can also disrupt the cycles of isolation and routine with the potential gain of increased job satisfaction and professional growth. Mentorship is one facet of teacher leadership that is formalized in which the veteran teacher supports the less experienced colleagues to improve their skills and support their success in the field (Katzenmeyer & Moller, 2001; Dozier, 2007). Stepping into this new leadership role and networking within the alumni collective may also open other leadership opportunities and increase job satisfaction.

CONCLUSION

The shortage of special educators is a crisis across the nation. The number of new special educators entering pre-service programs is insufficient to counter the high attrition rate in the profession (Mason-Williams et al., 2020). Universities and school districts have long-standing partnerships, but it is time to explore novel approaches using these existing relationships and resources to address the challenge in the field. The proposed model is a viable option to address teacher attrition in special

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education by focusing on a mentorship approach using a curated university alumni network to retain special educators in the field. It highlights the significant role that localized and targeted mentorship can have for early career and veteran special educators. Specifically, the alumni-based mentorship model supports early career teachers as they become independent teachers and encourages veteran teachers to consider leadership positions leveraging their special education expertise. The model calls for university and school district partners to re-engage with program alumni to support and cultivate the next generation of special educators while, at the same time, elevating qualified veteran teachers to more leadership positions within the profession in an effort to combat the chronic special education teacher attrition.

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BALL STATE UNIVERSITY & TEACHER EDUCATION DIVISION
VOLUME 3, ISSUE 1 | SPRING 2023 | ISSN: 2768-1432