Innovative Approaches to Teacher Preparation for Improving Use of Evidence-Based Practices in EI/ECSE

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ABSTRACT
Making connections between macro and micro-level practices help teacher candidates to better understand the interdisciplinary nature of the system in which they work. Therefore, we present a collaborative approach to support an increase in early intervention and early childhood special education teacher candidate knowledge and application of best practices. We use a case study to illustrate example approaches and resources (e.g., coaching and reflective practice) that address both macro and micro-level considerations for leaders as they support cross-disciplinary collaboration and teaching practices. Implications for leaders are included to support their preparation of early intervention and early childhood special education teacher candidates.

KEYWORDS
Collaboration, early intervention, early childhood special education, evidence-based practices, interdisciplinary, systems change, teacher education

Early Intervention (EI) and early childhood special education (ECSE) professionals support children ages birth to eight years and their families across a variety of inclusive settings (CEC & DEC, 2020), and are frequently one of the first contacts young children and their families have with the special education system. To be career-ready to meet the unique needs of this diverse population of infants, children, and families, EI/ECSE professionals must be prepared to implement evidence-based practices (EBPs; CEC & DEC, 2020). In practice, this translates to recognizing a need in real-time, understanding viable EBPs for addressing that need, and making decisions to implement the selected EBPs in the classroom. Further, once an EBP is implemented, career-ready professionals know to evaluate the success of their decisions based on student outcomes in order to use these insights to inform future instructional decision-making. This degree of career-readiness requires highly effective preparation focused on the contextualization of implementing EBPs in authentic classroom settings.

Although EBPs have been used widely in education and educational research (e.g., Coogle et al., 2015; Nagro et al., 2017), by explicitly connecting their implementation to both activities targeting the micro-level domain (e.g., reflecting on the self and use of EBPs) and activities targeting the macro-level domain (e.g., reflecting on leadership and the ways EBPs are presented in teacher preparation programs and valued in school systems), teacher educators, as well as teacher candidates, are encouraged to look beyond each individual practice to the philosophical *why* of what they are doing in the classroom and its implications for equity. These choices are influenced by the beliefs and knowledge built by one's professional identity, or how one thinks and acts as a member of a given profession (Mockler, 2011). Throughout the practices illustrated in this manuscript, teacher educators and teacher candidates first reflect on their own professional identities and then relate them to EBPs and professional standards and competencies. By connecting specific instructional practices for both EI/ECSE teacher educators and teacher candidates with system-

ic practices for ethical collaboration such as reflection on one's professional identity, we are demonstrating a novel approach to preparation that is both comprehensive in scope and cohesive in practice. Teacher preparation practices that are cohesive as opposed to disjointed, promote meaning-making for teacher candidates, and ultimately, encourage generalizability during candidates transition into the workforce (Nagro, 2022).

EBPs are practices with documented effectiveness in enhancing outcomes for children with disabilities (Cook et al., 2018). There are multiple approaches for identifying EBPs in education, with most approaches evaluating at least the following four fundamental components of the knowledge base: research design, research quality, quantity of research, and magnitude of effect for supporting studies (Cook et al., 2018). Although EI/ECSE preparation programs have focused attention on the qualifications, knowledge, and skills of the workforce, there remain gaps in the translation of knowledge to practice (Cook & Odom, 2013; McLeod et al., 2021). As educators integrate the material they learn from their coursework with their own understanding of the field and their professional identity, they enact these practices in various ways (e.g., Hsieh, 2016; Song & Park, 2016). One way to reduce this knowledge-to-practice gap is through reflective and practice-based learning opportunities within teacher preparation programs (e.g., Nagro et al., 2022; Schaffer, 2018; Walter & Tuckwiller et al., 2023) and throughout educational systems.

The teacher preparation landscape in EI/ECSE is vast, with licensure covering multiple age groups and settings (Chen & Mickelson, 2015). For example, an EI/ECSE licensed teacher may be expected to (a) coach and support parents interacting with their infant or toddler in their natural environment using a primary service provider approach; (b) teach in an inclusive preschool classroom and support a team of instructional assistants or paraprofessionals; (c) or provide push-in special education services in inclusive early elementary settings and collaborate or co-teach with general education elementary teachers. Given the broad scope of roles and responsibilities that EI/ECSE teachers may assume, teacher preparation programs must be intentional about preparing teacher candidates to work in diverse settings and collaborate across disciplines using research-supported strategies. There are many such ways to accomplish this, and the present article will focus on bringing the lens of professional identity to collaborative work and the implementation of EBPs for long-term sustainability through practical strategies such as coaching and reflective practice.

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Standards and Cross-Disciplinary Competencies in EI/ECSE

One goal in EI/ECSE teacher preparation is to use high-quality, EBPts throughout EI/ECSE systems. Different sets of standards and competencies address this, including the Council for Exceptional Children (CEC) and Division for Early Childhood's (DEC) Initial Practice-Based Professional Preparation Standards for Early Interventionists/Early Childhood Special Educators (CEC & DEC, 2020), and the ECPC Cross-Disciplinary Competencies (Bruder et al., 2019). The EI/ECSE Standards are focused specifically on high-quality preparation of educational professionals who work with children ages birth through 8 with or at-risk for developmental delays or disabilities and their families (DEC, 2020). These are the first set of standards that recognize the unique set of skills and competencies required from EI/ECSE teachers to support children and families across a variety of education settings. The EI/ECSE standards (CEC & DEC, 2020), focus on key knowledge of the profession, including collaboration and teaming (Standard 3) and using responsive and reciprocal interactions, interventions, and instruction (Standard 6). For collaboration and teaming, sub-indicators focus on the importance of cross-disciplinary collaboration and using evidence-based collaboration strategies. Similarly, Standard 6, focused on instruction, emphasizes responsive interactions, using evidence-based instructional strategies, and facilitating equitable access and participation.

In addition to EI/ECSE educator-specific standards, the Early Childhood Personnel Center (ECPC), along with seven other national organizations representing multiple disciplines providing services and supports to young children and their families, has developed a set of common core competencies to prepare all EI/ECSE professionals across disciplines

(Bruder et al., 2019). The partnering national organizations included the American Occupational Therapy Association (AOTA); the American Physical Therapy Association (APTA); the American Speech-Language-Hearing Association (ASHA); the Council of Exceptional Children (CEC) and the Division for Early Childhood (DEC), the National Association for the Education of Young Children (NAEYC); and ZERO TO THREE. The cross-disciplinary competencies consist of four main areas of focus including: (a) coordination and collaboration, (b) family-centered practice, (c) evidence-based intervention, and (d) professionalism. For example, the ECPC Cross-Disciplinary Competency Area "Evidence-Based Intervention" includes multiple indicators to support teacher educators in ensuring EI/ECSE teacher candidates not only have knowledge of EBPs but implement them in their practice (Bruder et al., 2019). The ECPC Cross-Disciplinary Competency Area "Professionalism" also provides indicators to support teacher educators in preparing teacher candidates to implement professional practice (Bruder et al., 2019).

EI/ECSE teacher preparation programs are tasked with the responsibility of ensuring teacher candidates are well prepared to engage professionally as they enter the workforce. This includes a commitment to following professional standards and policies, demonstrating discipline-specific knowledge (e.g., EBPs), and learning from and with other professionals in the field. Given this collective guidance for the preparation of EI/ECSE professionals, the purpose of this article is to provide practical examples at both the macro and micro levels within teacher preparation programs to collaboratively embed innovative practice opportunities to support teacher candidates' use of EBPs across disciplines through a lens of reflective practice to inform professional identity. The macro-level domain of the profession consists of the larger education system, of which teacher candidates are participants. Whereas the micro-level domain of the profession are those that teacher candidates entering the workforce have direct interaction (autonomy) with on a daily basis. This multidimensional framework suggests that both individuals (micro) and the environment (macro) they inhabit include internal factors (e.g., personality, values, attitudes, emotions, and goals) and external factors (e.g., job requirements, behavior, organizational culture, and pay; Edwards & Billsberry, 2010), which widens the interactions and influences that each domain may exert on one another (Fox et al., 2020). An individual teacher candidate's professional identity will likely shape the micro and be shaped by the macro, however career-ready professionals who take an active role in their ongoing development though collaboration and reflection will also influence the larger environment they are working in ideally for the betterment of student learning (Nagro et al., 2022). In these ways, while macro-level practices tend to focus on larger systems, these practices are still made up of individuals values and goals at the micro level. The macro-level practices and tools are grounded in research-based approaches to collaboration and leadership. We will make clear connections to specific indicators for each suggested practice at the micro level along with vignettes to support implementation.

Systems Level Supports for Implementing EBPs

Although important for teacher preparation programs, working to support the implementation of EBPs can also happen more broadly. Overall, to support the success of planning for and implementing EPBs, teacher educators can use implementation research to solve practical, local problems through continued collaboration between one another and practitioners in the field by modeling for, and targeting EI/ECSE teacher candidates in direct, concrete, and tangible ways in teacher preparation programs (e.g., Moir, 2018). This use of research and intentionality in planning ultimately serves a dual purpose of addressing systems-level needs while also modeling the following guiding principles for EI/ECSE teacher candidates: (a) focusing on persistent problems of practice through use of research, (b) collaborative and iterative cycles of improvement for the implementation and sustained use, (c) developing organizational capacity, and (d) commitment to developing theory, knowledge, and practice-based expertise for ongoing advancement of practices in the field (LeMahieu et al. 2017; Penuel et al., 2015).

As part of this planning for EBP implementation, it is also helpful to promote reflective practice at the systems level. Utilizing a framework to promote reflection fosters collaboration in these macro-level planning phases. As illustrated by Table 1, the Leadership Thought Framework (i.e., to ground thinking in three areas most directly related to systems work), and the reflective questions in Table 2 (e.g., the use of implementation science to support sustainability), leaders across the field are encouraged to consider problems of practice in an interdisciplinary manner. These may be varied and include questions surrounding: (a) finance (can you sustain your goal or practice monetarily and for how long), (c) strategic alignment (how you will achieve your goals), and (c) overarching generative thinking (mission and values), which is used in other fields such as organizational leadership, helps to drive reflection at multiple phases of systems change and foster true collaboration amongst vested

TABLE 1: Leadership for Ongoing Collaboration

Focus Area	Definition	Question	Cross-Collaboration Example
Fiduciary	Means-focused: (resources and legal compliance)	Will a school district pay for the placement of a child in a private school if the child cannot be served in the district?	Team acknowledges their positionalities when discussing resources and compliance of school placement. For example, the school director may worry about the availability of resources, while the EI agency is primarily focused on legal compliance.
Strategic	Future-Thinking: end-focused (setting and evolving priorities)	How many children will be placed in home or hospital settings and what personnel do we need to support these children?	A university supervisor supports teacher candidates to identify goals when using peer coaching of naturalistic communication strategies for children who may be placed in home or hospital settings.
Generative	Neither end-nor means-based (identity; mission fit focus; creative, critical and deeper thinking/ big thinking)	Are we joining in on all the other EI programs in the area and only hiring resource teachers? Are we playing it safe instead of providing other models to the community?	University Supervisor asks teacher candidates to reflect on their use of peer coaching and if others around the country are using the same models?

parties at the systems level (Creeden, 2019; Walter & Spence et al., 2023). The Leadership Thought Framework consists of engaging with the talents of the organization or workplace with the outcome of increasing value-added wisdom, organizational culture, active learning, and innovation (Kern, 2019). Although substantial research has indicated that organizational resources and management processes are driven by leaders, most leadership frameworks focus solely on an individual level without considering the broader context. The Leadership Thought Framework can help build a foundation for a more holistic approach incorporating both individual and contextual factors that support successful implementation (Kern, 2019).

Practices that build a foundation of structure, trust, and respect for the organization support change at the forefront, which often leads to improved long-term outcomes (Patel, 2020; Walter & Spence, 2023). One way leaders can address some of the questions in the initial implementation phases is through targeting conversations in focused and specific ways to get at individuals' perspectives. The following table and vignette depict examples of how leaders can use the Leadership Thought Framework to ask specific questions and support ongoing collaboration and reflection on the use of EBPs.

Dr. Smith, an EI/ECSE department chair and a university supervisor, is working to build community partnerships to enhance the EI/ECSE program's field experiences. She meets monthly with representatives from the local Early Intervention agency, an Elementary School Principal, and a childcare center director. Through these conversations, Dr. Smith notes that while her priority is on preparing EI/ECSE practitioners to think deeply about educational systems change and evaluate models of inclusive practice, others do not always have the same priorities. For example, the local elementary school is concerned about hiring enough teachers and having the money to pay for support staff. The representative from early intervention, on the other hand, wants to discuss the impact of overflowing hospitals on medically fragile children's access to services. Although seemingly disparate priorities, everyone at these meetings is working towards the same goal: supporting young children with disabilities. Dr. Smith remembers a training she took on the Leadership Thought Framework to support collaboration and reflection and introduces it to the team so they can work on perspective-taking through this leadership lens. Through their discussions, the team realizes that they are coming from different focus areas and commits to acknowledging their positionalities when discussing priorities for the field. In this way, they approach each other with compassion and understanding, which leads to open and honest discussion and improved collaboration when challenges arise.

After the team spends some time getting to know one another and acknowledging their positionalities through differing activities, Dr. Smith asks if this team would mind if she uses this example in her preparation program to demonstrate how interdisciplinary teams want the best for the children and families they are working with, but may approach goal-setting from different perspectives and therefore focus on

TABLE 2: Reflective Questions for Planning EBP Use Across the Implementation Phases

Exploration	Installation	Initial Implementation	Full Implementation/ Sustainability
Do you have a broad range of stakeholder representation for input on your policies, curricula, and teaching practices? Do stakeholders involved adequately represent the diversity in your community? Are all voices represented?	Do you have regularly planned bi-directional communication with community members and stakeholders for ensuring understanding of the plan and needs related to implementation of evidence-based teaching practices?	Do you have a mode for gathering stakeholder feedback to help make recommendations for improvement in initial implementation as part of improvement cycles?	Are there modes for ongoing bi-directional communication with community members and stakeholders to ensure improvements can be made as community and stakeholder needs change over time and as new research evidence emerges related to the EBP implementation?
Have you established a team focused on supporting implementation of the EBP (i.e., 'implementation team')?	Do all implementation team members know their roles in supporting the implementation of the EBP AND have time to support implementation of the EBP?	Are coaches providing feedback and support to staff about implementation of the EBP?	Is the feedback from coaching on implementation of the EBP regularly being implemented by staff as part of improvement cycles?
Is the practice you propose to implement clearly defined?	Do you have a fidelity measure and data collection plan in place related to the EBP?	Are staff beginning to use the data gathered to improve implementation?	Are all staff consistently gathering and using the data to improve implementation?
Is the practice you propose to implement based in research and a good fit for the setting?	Have staff been trained in the EBP and data collection measures?	Are most staff using the EBP AND starting to show fidelity of implementation?	Have all staff achieved fidelity of implementation (i.e., is the practice implemented with high levels of quality, consistently over time)?
Is there adequate support from leadership (funding, time)?	Has leadership put policies in place to support the implementation of the EBP (i.e., dedicated time for teaming and collaboration or funding for training and ongoing professional development related to the EBP)?	Is there a process for ensuring policies put in place for supporting the EBP are regularly being followed? And, if any difficulties are noted, a process for making changes or providing additional supports?	Are newly hired staff trained in the implementation and any policies and/ or procedures related to the EBP to ensure sustainability over time?

Note. Questions based upon the Implementation Stages Planning Tool (NIRN, 2020).

different priorities. Dr. Smith would like her students to use this "real life" case study example as a way for students to think about what educators would do in a situation when people are not on the same page before true interdisciplinary collaboration begins.

Practices and Tools to Support Teacher Educators

Although there is a call for cross-disciplinary collaboration across EI/ECSE disciplines, this may be challenging to fully achieve (Bricker et al., 2020). Balancing the demands of preparing EI/ECSE professionals to serve families with children who experience disabilities can be challenging by itself, without adding in the complexity of supporting cross-disciplinary collaboration across various systems comprised of academic divisions or colleges, preparation, field placements, and post-graduation retention and quality. Importantly, it is critical for teacher educators to understand their own professional identities, perspectives, and feelings about collaboration prior to attempting to engage in cross-disciplinary approaches to preparation. Without this important step of self-reflection, teacher educators may inadvertently experience unacknowledged emotions, biases, or thought patterns that influence decision-making. This may unintentionally lead to decisions and choices being made that do not align with one's personal values or the best interest of the individual or system with whom you are partnering. When decisions are being made that are not in alignment and self-reflective work has not been a focus before collaboration, working together may lead to language barriers, dispositions differences, conflict, anxiety, depression, or burnout, which negatively affects the quality of work, and decreases individual and educational outcomes (Gossameier, 2022). Reflection and collaboration are frequently disconnected from one another (Daily & Hauschild-Mork, 2017), however,

they are an important way to ensure a comprehensive and cohesive preparation process for EI/ECSE teacher candidates.

To support the success of these macro-level efforts, leaders (e.g., deans, department chairs, professors, practitioners in all fields) can build off of their own individual professional and ethical identities to model and form collaborative relationships as well as create more robust systems as part of an intentional plan for systematic improvement (Soicher et al., 2020). In doing so, professionals who train EI/ECSE teacher candidates need to specifically and concretely illustrate how high-quality collaborations are formed. For example, an interdisciplinary team of faculty members can create and implement a problem of practice assignment where teacher candidates either: (a) receive a practitioner role (i.e., PT, OT, SLP, District Leader…) or (b) collaborate with other teacher candidates in their respective fields on a problem of practice "case" in which the team has to come up with a solution together, as a team, integrating multiple perspectives. Working through problems of practice encourages teacher candidates to move from focusing mostly on the self to focusing on others (Yeigh, 2018). This mindset shift may reduce disconnects within and between professionals, as well as increase self-reflection and communication, interdisciplinary and strategic thinking, and integration at both the micro and the macro levels.

When making macro-level changes to improve the implementation of EBPs and collaboration, faculty should reflect on the anticipated needs and supports available across all phases of implementation (i.e., exploration, installation, initial implementation, and sustainability). This includes reflective questions for planning for EBP implementation in the 'exploration' phase through reflecting on necessary supports for ensuring the long-term use of the EBP in the 'sustainability' phase (see Table 2). Pre-planning for activities and support during each phase of implementation has been linked to improved rates of sustainability of EBPs (Wong et al., 2022). Thus, leaders and/or faculty members can consider the questions in Table 2 during each phase of the implementation process to help bridge the gap from knowledge to practice in their EI/ECSE teacher preparation programs (Active Implementation Frameworks; National Implementation Research Network, 2020). Ultimately, this depth of reflection is foundational to ensuring an intentional and planned approach to systemic change at the teacher preparation level.

Prior to the semester starting, Dr. Smith, an EI/ECSE department chair, holds a meeting with program faculty. She begins by asking everyone to consider their positionality (e.g,. one's own experiences and biases that may impact their relationships and work with students) and reflect on their priorities for the coming year relating to supporting teacher candidates' practices. Then, they review the exploration questions in Table 2 to determine their alignment and differences in goals. Through this discussion, the team decided that while they are committed to supporting teacher candidates' reflection and collaboration, they need to practice working collaboratively using the skills they will model, with faculty in different departments or school administrators before they can support others with these skills. The department makes a plan to reach out to a few different members from other disciplines to "workshop" respectful dialogue and have hard conversations about a real-life problem of practice, writing steps along the way to then help support and model for teacher candidates. Through this experience, the EI/ECSE department has gained macro-level knowledge on how they may coach teacher candidates through self-reflection of their professional identities.

Micro-Level Practices and Tools to Support Teacher Candidates

Through applying this macro-level programmatic knowledge gained from using the Leadership Thought Framework, teacher preparation programs can move to the micro level and focus on the practices of individual EI/ECSE teacher candidates. High-quality teacher preparation programs, focused on preparing candidates to implement EBPs, are one avenue to ameliorate the research-to-practice gap (e.g., Nagro et al., 2022; Schaffer, 2018; Walter & Tuckwiller et al., 2023). Furthermore, the method by which they implement this learning process is equally as important as the EBPs themselves (Nagro, 2022). Although there are many important ways to support teacher-candidate learning, two research-based approaches include coaching and reflection. These approaches allow teacher educators to embed innovative and engaging practice opportunities to assist teacher candidates in demonstrating proficiency in the EI/ECSE initial preparation Standard "Using Responsive and Reciprocal Interactions, Interventions, and Instruction" as well as the Cross-Disciplinary Competency "Evidence-Based Intervention" and "Professionalism" Indicators.

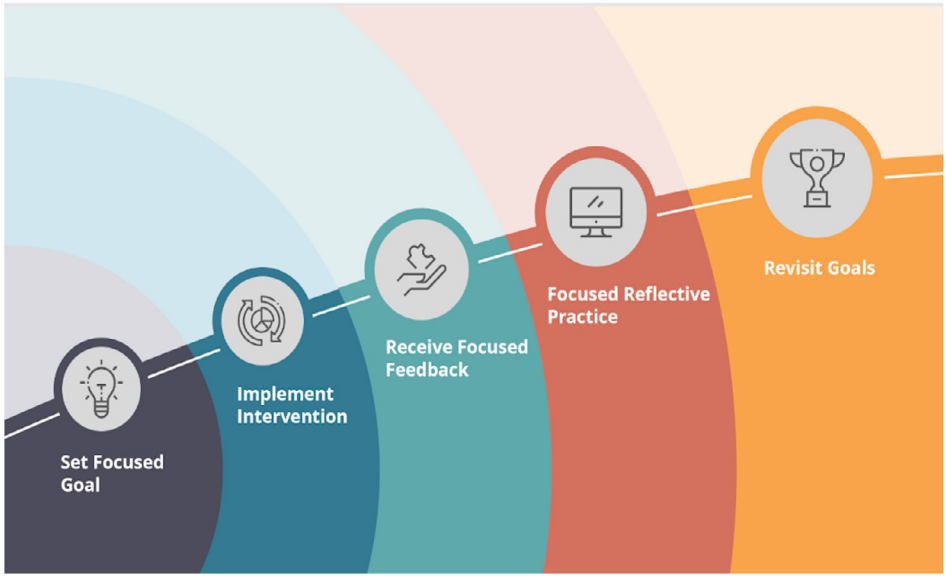
Coaching

Coaching can support teacher candidates in their practice by allowing an outside observer to provide feedback and support reflection on what they witnessed (e.g., Coogle et al., 2023). Although coaching can take many forms, one common element across models that supports teaching practice is performance-based feedback (Cornelius & Nagro, 2014). Specific, immediate, affirmative, and suggestive feedback has been identified as the most effective in

changing practice (Scheeler et al., 2004). Researchers have implemented performance-based feedback using a variety of models including university instructor-to-teacher candidate (e.g., Barton et al., 2016; Coogle et al., 2020; Coogle et al., 2015) and peer-to-peer (e.g., Coogle et al., 2023). In the university instructor-to-teacher candidate model, the instructor has traditionally partnered with the teacher candidate to identify a goal and then met with them regularly to review the goal, observe, and provide feedback related to the goal. In the peer-to-peer model, teacher candidates have engaged in a similar process to what was identified; however, they provided feedback to one another as opposed to the instructor (Coogle et al., 2023).

Although all types of coaching can support educators to use EBPs, peer coaching provides some specific benefits. First and foremost, university supervisors have many teacher candidates to supervise and a limited amount of time. By using peers as a resource, teacher candidates both receive more coaching feedback and have the opportunity to reflect on each other's practices. In fact, a recent study demonstrated a statistically significant connection between teacher candidate EBP implementation and preschool child desired target behavior through technology-based peer coaching (Coogle et al., 2023). Embedding the peer coaching process within courses supports both the EI/ECSE standards 3 (Collaboration and Teaming) and 6 (Using Responsive and Reciprocal Interactions, Interventions, and Instruction; DEC, 2020) as well as the Evidence-Based Intervention Cross-Disciplinary Indicators (a) uses evidence-based practices during interventions with a child, family, and/or other caregivers and teachers, (b) incorporates evidence-based practices across learning opportunities (activities and routines) within the child's home, community, and classroom, and (c) systematically collects and uses data to monitor child and family progress to revise intervention plans as necessary and document intervention effectiveness.

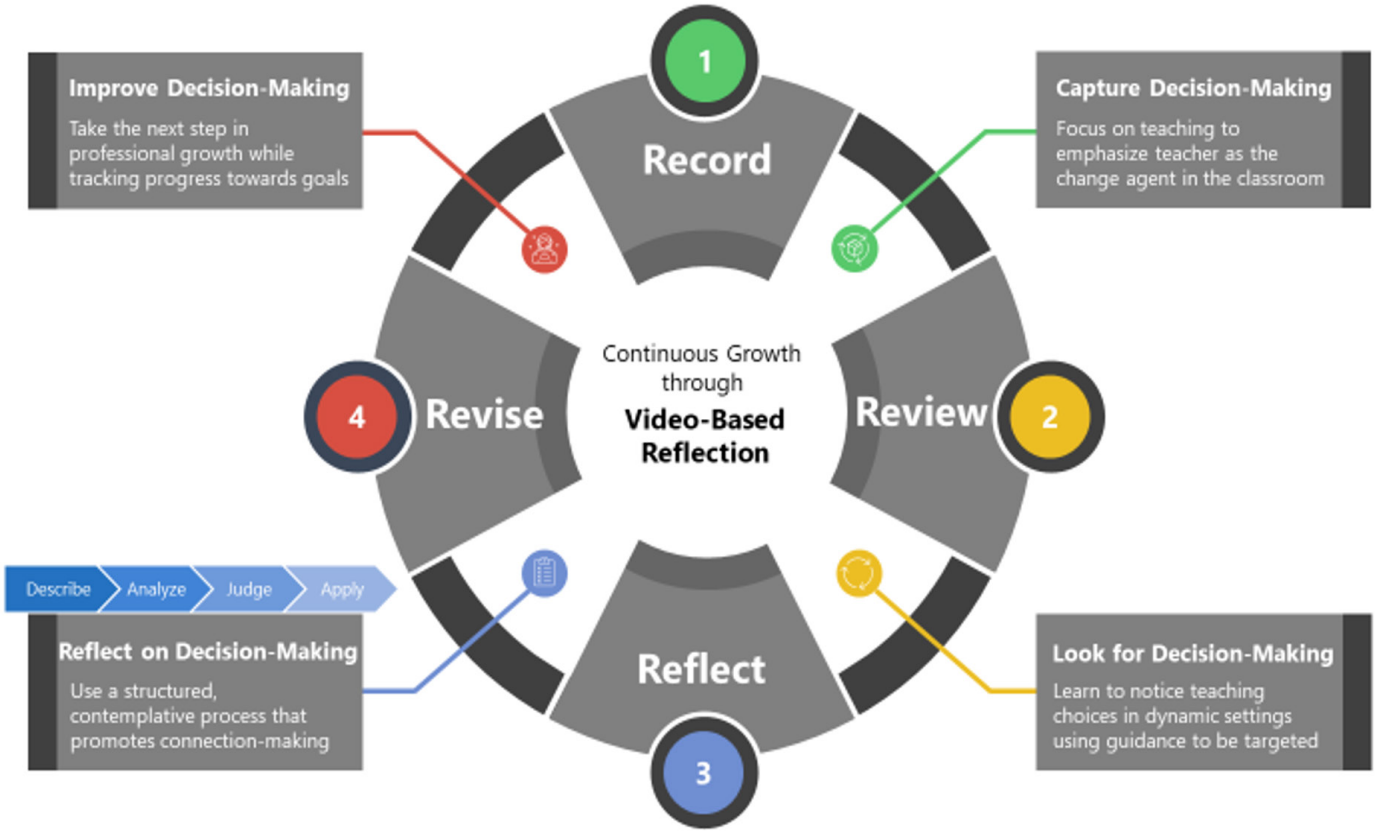
FIGURE 1: Coaching Process



Peer coaching also aligns with Professionalism Cross-Disciplinary Indicators through (a) collaborative consultation practices when working with service providers and families and (b) provision of performance feedback from mentors and teachers, reflective supervision to other service providers (Bruder et al., 2019). Additionally, peer coaching can be embedded in a collaborative process within teacher preparation coursework when working on problems of practice or "real life" case studies to help teacher candidates refine reflection and self-awareness skills and improve collaboration practices. Furthermore, peer coaching may help empower teacher candidates to share their perspectives and describe their instructional choices based on their understanding of their professional identities (Abbasian, 2018). The following figure and vignette illustrate how universities and schools can work together to support teacher-candidate peer coaching and the use of EBPs.

Sarah, an undergraduate student in speech and language pathology, and James, an undergraduate EI/ECSE major, are completing their field experience with their school-based supervisors, Ms. Lopez, and Ms. Boaz, in an inclusive preschool setting. Their university supervisor, Drs. Smith and Hope have asked them to practice peer coaching on the use of naturalistic communication strategies with a young child receiving services for Autism Spectrum Disorder using this coaching cycle. First, Sarah and James work with Drs. Smith and Hope and Ms. Lopez and Boaz to set goals for themselves and their target preschool students. Sarah decides to focus on language modeling and James selects offering choices. They then take turns video-recording each other in the classroom while working with this student. After school, they meet and watch the videos together, discussing their relevant perspectives, knowledge, and expertise in their respective disciplines, and then discuss successes and challenges. Then they individually write a short reflection on the process which they share with their instructors. Both instructors and faculty agree that they see significant growth and ownership over the implementation of EBPs when

FIGURE 2: Reflection Cycle



the teacher candidates coach each other in this way. It is then time to refine their goals and begin the cycle again (see Figure 1).

Reflective Practice

As illustrated in the previous vignette, coaching and reflection have been used in conjunction to support teacher candidates' quality use of practice. Reflective practice is common in teacher preparation because through reflection, teacher candidates recognize their own strengths and limits, explore new ways of improving, and develop competence in instructional decision making (Nagro et al., 2017). In one study, instructors facilitated goal-setting sessions with teacher candidates, conducted ongoing teaching observations, created multiple opportunities for performance feedback, and prompted candidates to reflect upon their use of practices using a record, review, reflect, revise cycle (Nagro & Monnin, 2022). In this cycle, candidates recorded their instruction, reviewed their recorded instruction, reflected on their instructional decision-making across four dimensions of reflection, and then made plans to revise their practice in subsequent lessons. These four dimensions of reflection (describe, analyze, judge, apply) are intentionally organized to guide candidates toward deeper, more critical reflective practice as opposed to superficial summarization exercises (Nagro et al., 2017; Nagro, 2020, 2022). Specifically, during the reflection portion of the record, review, reflect, revise cycle, candidates completed a graphic organizer ("Reflection Matrix") where they were prompted to describe a teaching choice they made about the teaching practice they were targeting for improvement, analyze why they made that decision, judge the success of their decision based on early childhood student outcomes, and apply these insights to plans for future instructional decision-making (Nagro et al., 2022). In this manner, reflecting collaboratively and independently can support an increased tolerance of others' perspectives and knowledge, increased awareness of strengths and areas for growth, as well as improved communication skills. Figure 2 offers a modified version of this framework that teacher candidates could use to reflect on a video recording of their teaching.

Recent research found that teacher candidates' rate and quality of effective teaching practices including the quality of reflective ability increased over time as a result of structured reflection activities that included opportunities for performance feedback (Nagro et al., 2022). Reflective practice that is structured and directly linked to instructional

decision-making paired with opportunities for feedback can improve both how candidates think about their teaching and the quality of their instruction (Nagro et al. 2017; Nagro et al., 2022). Thus, the use of embedded reflection supports Professionalism in Cross-Disciplinary Indicators (a) uses self-reflection and professional development to stay current in evidence-based disciplinary and interdisciplinary practices, (b) demonstrates knowledge of one's discipline-specific practice standards and guidelines, and (c) demonstrates ethical decision making and professional behavior (Bruder et al., 2019).

As it can be difficult to determine the exact line between micro and macro-level practices, using the reflection matrix (See Figure 2) in conjunction with the Thought Leadership Framework (Tables 1 & 2) provides an innovative approach to identify resources needed for a high-functioning system. This integration also supports the ever-present goal of EBP implementation at every level. Further, this emphasis on reflection for the purpose of goal setting and ongoing improvement, promotes the professional lens of sustainability through data-driven results and outcomes. This is crucial in higher education with teacher candidates (and students in other fields) as a preventative measure to support increased reflective practice and collaboration within and across fields.

Both Sarah and James are surprised by how in-depth their reflection on Dr. Smith and Dr. Hope's co-taught class needs to be. In previous courses, their written reflections comprised summarizing what they did and then saying if they felt positively or negatively about it. However, Dr. Smith introduced them to the reflection matrix depicted in Figure 2 and asked them to use this as their framework when reflecting on their video-recorded lessons. Though challenging at first, Sarah and James believed that they were change agents in the classroom and intentionally focused on their decision-making when reflecting. By describing what they saw, analyzing it, judging their choices, and then applying this knowledge in the future, Sarah and James started to become reflective practitioners, independently and together. They knew that even though their mentors would not be there to coach them through every challenge they would face as a speech pathologist and or EI/ECSE practitioner in the future, this foundation of reflective practice would allow them to continually assess their teaching and practice effectively and proactively with other professionals within and across disciplines as the field grows and evolves.

Dr. Smith and Dr. Hope then use the same matrix to reflect on their systems level practices of supporting interdisciplinary preparation and teacher candidates' use of EBPs. They then come together and discuss how their reflections on their educational leadership this semester impacted their collaboration. They go through questions in the Thought Leadership Framework. Through this iterative process, they begin working together towards full sustainability by bringing other faculty into the process of designing next year's co-taught course.

CONCLUSION

Embedding best practices at both the macro and the micro levels can support teacher candidate use of EBPs in the field and extend to professionals in related fields in collaborative and inclusive contexts. As illustrated throughout this article, there are numerous resources for leaders, including teacher educators, systems leaders, educational administrators, and mentor teachers to support cross-disciplinary collaboration and teaching practices. Coaching and reflective practice are strategies that teacher educators can use to facilitate both specific instructional practices and a mindset focused on reflection and growth. The tables and figures integrated throughout this article provide strategies that teacher educators can use both when designing programs as well as when teaching individual courses. By connecting both micro-level and macro-level domains during preparation, we help teacher candidates better understand the dynamic and nested nature of the education system. This understanding enables them to collaborate effectively with the broader community while recognizing the system they work within. Moreover, it empowers them to maintain a level of autonomy over their implementation of evidence-based practices (EBPs) through a commitment to reflective practice and ongoing improvement. This comprehensive yet cohesive approach equips teacher candidates to navigate the complexities of the educational landscape, fostering meaningful partnerships with stakeholders and driving systemic change toward equity and inclusivity. The vignettes provide examples of ways to use these strategies in both leadership and with teacher candidates. We know that early childhood is a key time in the lives of young children with disabilities, and with high-quality teacher preparation that integrates advanced practices of reflection, collaboration, and thoughtful implementation processes for EBP use, we can make a difference in the lives of children and families.

REFERENCES

Abbasian, G. K. (2018). Peer-coaching, EFL teacher's professional identity development and students' academic achievements. *Theory and practice in language studies* 8(1), 150–163. https://doi.org/10.17507/tpls.0801.19

Barton E. E., Fuller E. A., Schnitz A.

(2016). The use of email to coach preservice early childhood teachers. *Topics in Early Childhood Special Education, 36*(2), 78–90. https://doi.org/10.1177/0271121415612728

Bricker, D. D., Felimban, H. S., Lin, F. Y., Stegenga, S. M., & Storie, S. O. M. (2022). A proposed framework for enhancing collaboration in early intervention/early childhood special education. *Topics in Early Childhood Special Education*, *41*(4), 240-252. https://doi.org/10.1177/0271121419890683

Bruder, M. B., Catalino, T., Chiarello, L. A., Mitchell, M. C., Deppe, J., Gundler, D., Kemp, P., LeMoine, S., Long, T., Muhlenhaupt, M., Prelock, P., Schefkind, S., Stayton, V., Ziegler, D. (2019). Finding a common lens: Competencies across professional disciplines providing early childhood intervention. *Infants & Young Children 32*(4), 280-293, https://doi.org/10.1097/IYC.0000000000000153

Chen, C.-I., & Mickelson, A. M. (2015). State licensure/certification requirements for personnel serving infants and young children with special needs and their families. *Infants & Young Children*, *28*(4), 294–307. https://doi.org/10.1097/IYC.0000000000000046

Coogle C.G., Ottley J.R., Storie S., Rahn N.L., Burt A. (2020). Performance-based feedback to enhance pre-service teachers' practice and preschool children's expressive communication. *Journal of Teacher Education, 71*(2), 188–202. https://doi.org/10.1177/0022487118803583

Coogle, C. G., Rahn, N. L., & Ottley, J. R. (2015). Pre-service teacher use of communication strategies upon receiving immediate feedback. *Early Childhood Research Quarterly*, 32, 105-115. https://doi.org/10.1016/j.ecresq.2015.03.003

Coogle, C. G., Storie, S. O., Wade, C. B., Nagro, S. A., & Mitchem, K. (2023). The development of technology-enhanced performance-based peer feedback to support teacher candidate practice and child outcomes. *Journal of Special Education Technology,* https://doi.org/10.1177/01626434231172914

Cook, B. G., Haggerty, N. K., & Smith, G. J. (2018). Leadership and instruction: Evidence-based practices in special education. In J. B. Crockett, B. Billingsley, M. L. Boscardin (Eds.), *Handbook of leadership and administration for special education* (pp. 353-370). Routledge.

Cook, B. G., & Odom, S. L. (2013). Evidence-based practices and implementation science in special education. *Exceptional Children*, *79*(2), 135-144. https://doi.org/10.1177/001440291307900201

Creeden, J. E. (2019). *The board chair handbook: An essential guide for board leaders at independent schools.* National Association of Independent Schools.

Cornelius, K. E., & Nagro, S. A. (2014). Evaluating the evidence base of performance feedback in preservice special education teacher training. *Teacher Education and Special Education, 37*(2), 133-146. https://doi.org/10.1177/0888406414521837

Council for Exceptional Children (CEC) and The Division for Early Childhood (DEC). (2020). Initial practice-based professional preparation standards for early interventionists/early childhood special educators (EI/ECSE) (initial birth through age 8). https://exceptionalchildren.org/standards/initial-practice-based-standards-early-interventionists-early-childhood-special-educators

Daily, R., & Mork, M. (2017). Making it all count: A cross-disciplinary collaboration model incorporating scholarship, creative activity, and student engagement. *InSight A Journal of Scholarly Teaching, 12*, 64-78. https://doi.org/10.46504/12201704da

Edwards, J. A., & Billsberry, J. (2010). Testing a multidimensional theory of person-environment fit. *Journal of Managerial Issues, 22*(4), 476–493.

Fox, H. B., Tuckwiller, E. D., Kutscher, E. L., & Walter, H. L. (2021). What makes teachers well? A mixed methods study of special education teacher well-being. *Journal of Interdisciplinary Studies in Education*, *9*(2), 223–248. https://doi.org/10.32674/jise.v9i2.2170

Grossmeier, J. (2022). *Reimagining Workplace Well-Being: Fostering a Culture of Purpose,Connection, and Transcendence*. Modern Wisdom Press.

Guralnick, M. J., & Bruder, M. B., (2016). Early childhood inclusion in the United States: Goals, current status, and future directions. *Infants & Young Children, 29*(3), 166-177. https://doi.org/10.1097/IYC.0000000000000071

Hsieh, B. (2016). The importance of orientation: Implications of professional identity on classroom practice and for professional learning. *Teachers and Teaching, 21*(2), 178-190. https://doi.org/10.1080/13540602.2014.928133

Institute of Medicine (IOM) and National Research Council (NRC). 2015. Transforming the workforce for children birth through age 8: A unifying foundation. Washington, DC: The National Academies Press. https://doi.org/10.17226/19401

Kerns, C. D. (2019). Leading thought leadership: A practice-oriented framework. *International Leadership Journal, 11*(1), 3–41.

LeMahieu, P. G., Bryk, A. S., & Grunow, A. (2017) Working to improve: Seven approaches to improvement science in education. *Quality assurance in education, 25*(1), 2–4. https://doi.org/10.1108/QAE-12-2016-0086

McLeod, R.H., Hardy, J.K. & Sands, M.M. (2021). Preparation of early childhood special education personnel: Alignment with personnel preparation guidance. *Early Childhood Education Journal, 50*(3), 1011–1020. https://doi.org/10.1007/s10643-021-01242

Mockler, N. (2011). Becoming and 'being' a teacher: understanding teacher professional identity. In N. Mockler & J. Sachs (Eds.), *Rethinking Educational Practice Through Reflexive Inquiry* (pp. 123–138). Springer Netherlands. https://doi.org/10.1007/978-94-007-0805-1_9

Moir, T. (2018, July). Why is implementation science important for intervention design and evaluation within educational settings? *Frontiers in Education*, *3*. https://doi.org/10.3389/feduc.2018.00061

Nagro, S. A. (2020). Reflecting on others before reflecting on self: Using video evidence to guide teacher candidates' reflective practices. *Journal of Teacher Education, 71*(4), 420-433. https://doi.org/10.1177/0022487119872700

Nagro, S. A. (2022). Three phases of video-based reflection activities to transition teacher candidates from understanding to examining practice. *Journal of Special Education Preparation, 2*(1), 28-37. https://doi.org/10.33043/JOSEP.2.1.28-37

Nagro, S. A., deBettencourt, L. U., Rosenberg, M. S., Carran, D. T., & Weiss, M. P. (2017). The effects of guided video analysis on teacher candidates' reflective ability and instructional skills. *Teacher Education and Special Education, 40*(1), 7-25. https://doi.org/10.1177/0888406416680469

Nagro, S. A., & Monnin, K. (2022). Using simulated video analysis to promote special education teacher candidates' professional knowledge and reflective ability. *Teacher Education and Special Education, 45*(4), 269–285. https://doi.org/10.1177/08884064211059854

Nagro, S. A., Regan, K., Coogle, C., O'Brien, K. M., Raines, A. R., & Wade, C. B. (2022). Promoting reflective ability through a comprehensive field experience that combined video analysis and bug-in-ear coaching. *Journal of Special Education Technology*, *37*(3), 399-412. https://doi.org/10.1177/01626434211022005

National Implementation Research Network (2020). Implementation Stages Planning Tool. Chapel Hill, NC: National Implementation Research Network, FPG Child Development Institute, University of North Carolina at Chapel Hill. https://implementation.fpg.unc.edu/wp-content/uploads/Implementation-Stages-Planning-Tool.v8-NIRN-only-Fillable.pdf

Patel, A. (2020). *Humanity at Work: Diversity, Inclusion, and Wellbeing in an Increasingly Distributed Workforce.* New Degree Press.

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Penuel, W., Allen, A., Coburn, C., & Farrell, C. (2015). Conceptualizing research–practice partnerships as joint work at boundaries. *Journal of Education for Students Placed at Risk, 20(*1-2), 182-197. https://doi.org/10.1080/10824669.2014.988334

Scheeler, M. C., Ruhl, K. L., & McAfee, J. K. (2004). Providing performance feedback to teachers: A review. *Teacher Education and Special Education,* 27(4), 396-407. https://doi.org/10.1177/088840640402700407

Shaffer, L. (2018). Training early childhood professionals using an interprofessional practice field experience. *Journal of Interprofessional Education & Practice*, *10*, 47-50. https://doi.org/10.1016/j.xjep.2017.12.002

Soicher, R. N., Becker-Blease, K. A., & Bostwick, K. C. (2020). Adapting implementation science for higher education research: the systematic study of implementing evidence-based practices in college classrooms. *Cognitive research: principles and implications*, *5*, 1-15. https://doi.org/10.1186/s41235-020-00255-0

Song, & Park, M.-H. (2021). Emotional scaffolding and teacher identity: Two mainstream teachers' mobilizing emotions of security and excitement for young English learners. *International Multilingual Research Journal*, *15*(3), 253–266. https://doi.org/10.1080/19313152.2021.1883793

Walter, H.L., Spence, C., Ellis, R.D. (2023). Leading systems change: A framework for embedding well-being in EI-ECSE. *Young Exceptional Children*. Monograph (9). Division of Early Childhood.

Walter, H. L., Tuckwiller, B. D., Howard, L. C., Spencer, K. H., & Frey, J. R. (2023). A mixed-methods approach to understanding early childhood special educators' well-being. *Early Childhood Research Quarterly, 65*, 374-384.

Wong, D. R., Schaper, H., & Saldana, L. (2022). Rates of sustainment in the Universal Stages of Implementation Completion. *Implementation Science Communications*, *3*(1), 1-12. https://doi.org/10.1186/s43058-021-00250-6

Yeigh, M. (2018). Using Problems of Practice to Leverage Clinical Learning. The Field Experience Journal, Vol. 22, p. 87-101. https://archives.pdx.edu/ds/psu/26658