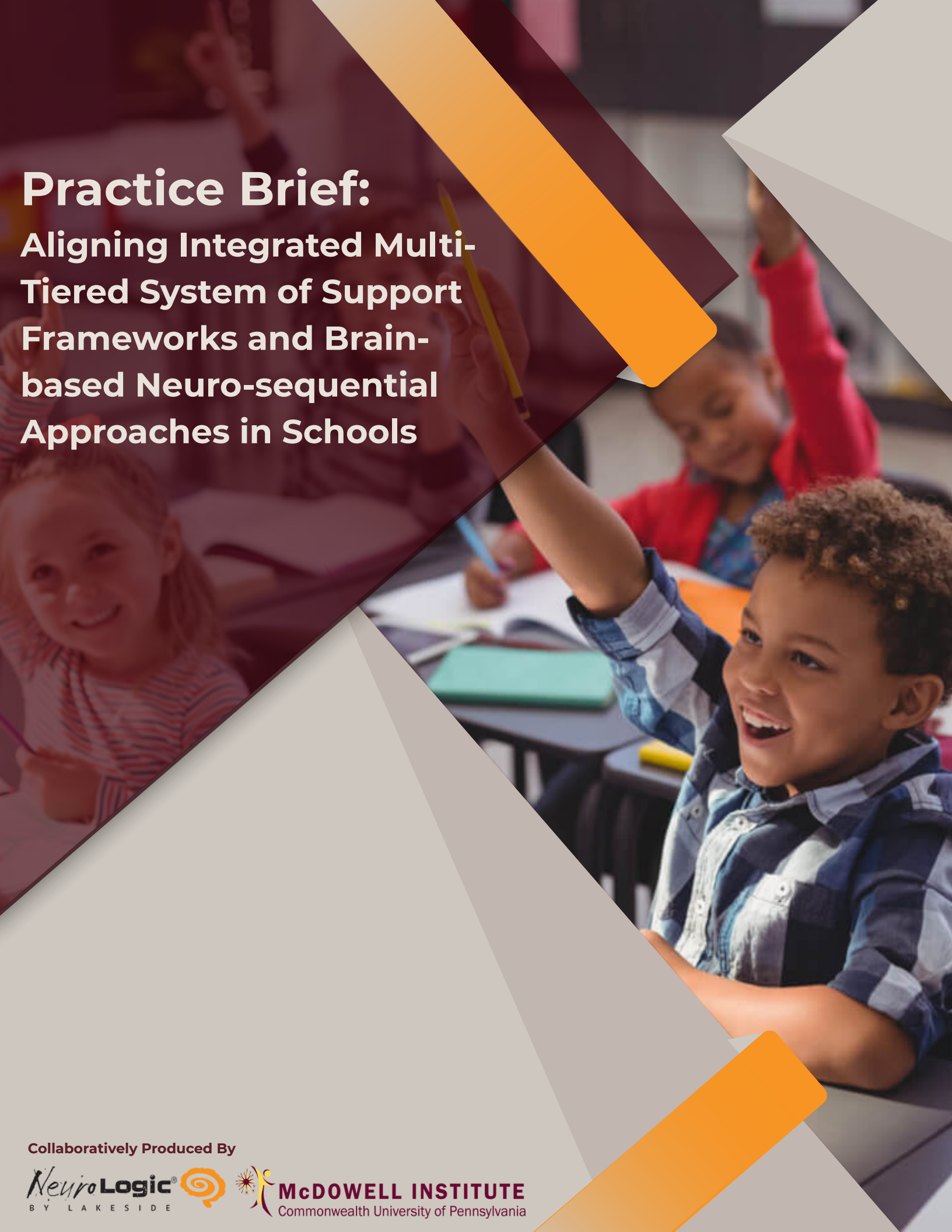




Practice Brief:

Aligning Integrated Multi-Tiered System of Support Frameworks and Brain-based Neuro-sequential Approaches in Schools

Collaboratively Produced By



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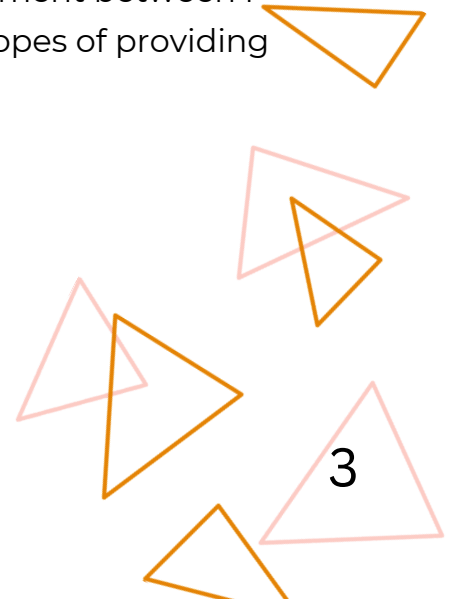
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Introduction and Purpose

School systems are attempting to implement numerous initiatives to address the academic and social-emotional-behavioral (SEB) needs of their students. Building on the foundational work of Response to Intervention (RTI), originally designed to address academic needs, in tandem with progress realized to address SEB needs through the Positive Behavior Intervention and Support (PBIS) framework coupled with enhancements to address mental health needs of students through the Interconnected System Framework (ISF), schools are exploring ways in which to operate integrated multi-tiered systems of support (I-MTSS). In a parallel manner, schools have been slowly, but surely, providing professional development to their instructional staff in brain-based approaches to instruction that reflect learnings from the field of neuroscience. However, there has been limited translational support provided to educators that highlights the alignment of brain-based approaches with PBIS, ISF, or more comprehensively I-MTSS.

In light of degrees of progress associated with these initiatives in schools, and even in schools that have launched I-MTSS, professional development and operating systems associated with brain-based strategies and PBIS, ISF, and I-MTSS in schools continue in many instances to remain siloed and exist tangentially to one another. The development of this Practice Brief represents a step toward supporting educators, with emphasis on classroom teachers, to understand the alignment between I-MTSS and brain-based approaches to instruction in the hopes of providing some degree of initial clarity.



Integrated Multi-Tiered Systems of Support

A multi-tiered system of support (MTSS) is a framework commonly implemented in schools to provide both preventive and intervention services to students in an efficient and effective manner (McIntosh & Goodman, 2016). Key components of an MTSS framework include delivery of instruction and intervention aligned to students' needs, assessment of framework fidelity and student outcomes, systematic use of data to inform implementation practices at a macro (e.g., building, whole grade/department) and micro-level (e.g., small group, individual student), and infrastructure (e.g., staffing, funding) to support sustained implementation. The multi-tiered nature of MTSS relates to the efficiency with which these components are deployed so that the appropriate student(s) receive the appropriate intensity of instruction and intervention, breadth and depth of assessment, frequency of data review and action planning, and deployment of resources (e.g., whole group, small group, or individualized supports).

Historically, academic models of MTSS (sometimes referred to as RTI) focus on supporting students' development of English language arts and mathematics skills. In a parallel manner, MTSS frameworks that focus on social, emotional, and behavioral development have traditionally been called PBIS, with differentiation of preschool approaches termed Program-Wide PBIS and K-12 approaches commonly known as School-Wide PBIS. Relatedly, ISF layered mental health services from community-based partners into PBIS. The use of different terms across academic, social, emotional, and behavioral MTSS frameworks has been not only the source of confusion among educators and laypeople but has furthered the misconception that such frameworks have markedly different components. MTSS frameworks share common core features; thus, integrating academic, social, emotional, and behavioral frameworks makes logistical sense. Further, and perhaps most encouraging, is that implementation of an I-MTSS framework effectively and efficiently results in academic, social, emotional, and behavioral benefits for students (I-MTSS Research Network, 2024) and further maximizes effective use of intervention resources.

I-MTSS, therefore, is a program-wide or school-wide preventive and intervention framework that explicitly and systematically integrates the core features of academic, social, emotional, and behavioral approaches across the tiers. Key components of an I-MTSS framework include: (a) integration of a continuum of evidence-based academic, social, emotional, and behavioral practices; (b) comprehensive data-informed decision-making that integrates academic, social, emotional, and behavioral data; (c) teaming and coaching structures that capitalize on integrated data and support integrated practices across all school settings and during all school activities; (d) comprehensive and systematic professional development focused on integrated practices; and (e) district- and building-level supports to install and sustain implementation across multiple years (I-MTSS Research Network, 2023). The following provide illustrations of these five I-MTSS key components.

A large body of evidence indicates that effective English language arts instruction should explicitly teach phonemic awareness, phonics, vocabulary, and comprehension skills and that these should be taught to fluency (Adams, 1990). Concurrently, considerable evidence notes that providing students with multiple opportunities to respond and relatively immediate supportive and correct feedback during instruction promote learning while minimizing contextually inappropriate behavior (Lane et al., 2015). In an I-MTSS framework, these practices are deliberately integrated when a teacher is planning, delivering, and reflecting on the quality of their lessons (I-MTSS Key Component #1). In traditional, siloed MTSS frameworks, one team reviews academic data on a regular basis (e.g., quarterly) to ascertain the extent to which all students are mastering academic standards. Separately, a different team reviews social-emotional-behavioral data (e.g., office discipline referrals) to determine whether tier 1 PBIS is adequately meeting the needs of most students. In an I-MTSS framework, the same team considers academic, social, emotional, and behavioral data simultaneously and in an integrated manner (I-MTSS Key Component #2) so that action planning and classroom coaching support integrated instructional practices to meet students' academic, social, emotional, and behavioral need (I-MTSS Key Component #3). Within traditional MTSS frameworks, professional development focuses exclusively on either academic or social, emotional, and behavioral content and educators' practices.

Within an I-MTSS framework, professional development relies on content and development of practices that are integrated in nature (e.g., embedding evidence-based classroom management practices with academic instructional practices; I-MTSS Key Component #4). Lastly, fidelity of MTSS frameworks that are not integrated tend to ebb and flow over time; however, an I-MTSS framework focuses on building the district- and building-level capacity to sustain implementation, for example, via district and building policies and procedures and hiring practices that explicitly align with I-MTSS key components.

Brain-Based, Neuro-sequential Approaches to Instruction

A critical gap in many academic and social-emotional-behavioral supports offered in schools is an emphasis on understanding brain function and development as well as the related impact of stress on learning (Baweja et al., 2016; Lohmiller et al., 2022; Neurosequential Network, 2018; Perry & Hambrick, 2008). More specifically, educational programming that is insensitive to the neurological impact of stress on students may not sufficiently identify students' needs expressed through their behavior which, in turn, may adversely affect desired academic and social-emotional-behavioral outcomes. Toxic stress resulting from exposure to trauma can disrupt brain development which can negatively affect learning and alter the way young people experience health throughout their life (Anda et al., 2006; Gonzalez et al., 2016).

Trauma refers to an event, series of events, or set of circumstances that is experienced by the individual as physically or emotionally harmful or life threatening resulting in long lasting adverse effects (Guarino & Chagnon, 2018). The prevalence of trauma in youth has been increasing and is a significant public health concern, with more than two-thirds of children experiencing traumatic events by the age of 16 (Finkelhor et al., 2015). Students experiencing emotional distress or trauma are more likely to struggle with self-regulation and executive functioning (Beers & De Bellis, 2002; Carrera et al., 2019; De Bellis et al., 2011; DePrince et al., 2009, Gervasio et al., 2020; Kavanaugh et al., 2017) resulting in difficulties in navigating aspects of the school environment and the learning process.

Educators, equipped with an understanding of how interdependent brain functions can be impacted by stress, are able to establish environments that help students become and remain regulated (Berardi & Morton, 2017; Brunzell et al., 2015) which in turn allows for development of executive functioning which is controlled attention toward planned goals.

Trauma-informed brain-based approaches reflecting an understanding of neurodevelopment and executive functioning have been promulgated as best practice for supporting students with trauma histories (Crosby, 2015; Lohmiller et al., 2022). However, despite the need for brain-based approaches in schools, historically these types of strategies have been perceived as either clinical or too cumbersome (Maynard et al., 2019) rather than linking academic and behavior performance through development of executive functioning (Zelazo, 2020).

The foundation of brain-based strategies is neuroscience (Perry & Ludy-Dobson, 2010). The brain develops from the bottom up, from the brainstem to the mid-brain, followed by the limbic system to the outer portion of the brain known as the neocortex. The lower regions of the brain mediate basic bodily functions such as heart rate and respiration. The mid-brain, located within the brainstem, is responsible for motor control, visual and auditory processing, transmitting sensory information, and reflexes. The limbic system processes emotions, memory and motivation with the upper (neocortex) part of the brain responsible for more higher-order thinking (e.g., logic, insight, reason) and executive functioning or controlled attention toward a goal.

Developmental interruptions can be caused by repeated activation of the body's stress-response system (also known as the "fight-or-flight" response or "survival mechanism") which is a network of nerve and hormonal signals that helps the body react to perceived threats. Any disruption in the body's equilibrium, whether physical or psychological, causes a stress-response (Ghasemi et al., 2024). The stress-response is characterized by a series of physiological and behavioral changes as a result of the body releasing a cascade of stress hormones (adrenalin and cortisol) that enable a person to react quickly to the perceived threatening situation. Repeated activation without opportunity to return to equilibrium causes overdevelopment of neural networks within the stress-response system leading to sensitized stress responses (Perry, 2009). This means that the individual will likely misinterpret environmental cues as threatening.

Even more concerning, this over functioning of the lower parts of the brain diminishes the opportunity for development of the prefrontal cortex which is the center for executive functioning (Cicchetti et al., 2001; De Bellis et al., 2002; De Bellis & Zisk, 2014) and the basis for academic learning and foundation for regulated and self-directed behavior.

Youth that have experienced high levels of adversity during childhood (referred to as adverse childhood experiences [ACEs]), are at greater risk for their stress-response systems to become sensitized (Burke Harris, 2018). Resultantly, students with this life-experience profile are more likely to demonstrate either over-reactions which present as hypervigilance or under-reactions which present as dissociative behavior to naturally occurring common stressors that occur throughout the school day which can inhibit learning (e.g., physical proximity of another person, task assignment with time constraints, minor disagreement with a classmate). Proactive, planned and structured implementation of brain-based strategies (e.g., brain-breaks, access to fidgets, flexible seating, proactive/structured use of calming spaces) which occur in a relationally rich environment helps all students, including those that may be a greatest risk to over-react or under-react to common stressors as school, by allowing for lower brain regulation and opportunity for development in higher brain regions involving executive functioning.

In alignment with proactively planned and structured implementation of brain-based strategies, application of the neuro-sequential approach of regulate-relate-reason (3Rs) in response to a student experiencing dysregulation due to engagement of their threat response can be situated across tiers. Providing lower brain region regulation through intervention within I-MTSS in schools addresses both behavior issues due to dysregulation as well as undergirds academic potential by providing opportunity for development of executive functioning skills in the top part of the brain (prefrontal cortex) as a result of the student being regulated. I-MTSS acknowledges interdependence of brain regions and provides a systematic bottom-up approach to support neuro-sequential brain development through optimal learning settings.

To illustrate, the initial step in this approach when interacting with a student that appears dysregulated starts with the lower brain regions (brain stem and midbrain). These areas of the brain control heart rate, body temperature, operationalize sugar to muscles and the release of adrenaline and cortisol.

Cues of safety such as the presence of a calm and trusted adult, engaging in deep breathing, being in a quiet safe space or being able to move for energized muscles will help regulate these lower areas of the brain which sends feedback to shut down the stress-response system (i.e., regulate). Indicators of regulation might be a request for water by the student who suddenly becomes more present from a dissociative response or the student who engages in relational outreach with a question about a future event. This indicates that the student is now functioning more at their limbic system or relational area of the brain. This allows the teacher's focus to shift to connection and empathy (i.e., relate) which should be rooted in curiosity about the child's experience (e.g., That situation was hard...wait and listen, what's happening for you now...wait and listen). It can be tempting to begin a logic sequence here, but the student may need a neutral topic discussion first to find connection (e.g., I love the fall colors... wait and listen). Students will naturally begin problem-solving or flexible cortex-based conversation when they are co-regulated with the teacher (e.g., Will I be allowed to go back to class? Are you going to call my mom?). Once the student of concern is regulated and feels connected, problem-solving (i.e., reason) or further instruction can occur. The benefits associated with integration of brain-based approaches will help to address not only the needs of students with a high number of ACEs, but further enhance the learning environment for all students.

Aligning Brain-based Approaches Within Tier 1 of I-MTSS

Tier 1, often referred to as universal prevention, is comprised of proactive supports provided to all students. These supports serve as the foundation of I-MTSS to address the academic as well as social-emotional-behavioral needs of all students. The need for more targeted or individual-intensive supports can be lessened as a result of providing high-quality instruction through a positive, brain-based (trauma-informed) learning environment for all students.

The incorporation of brain-based strategies within the context of Tier 1 daily practice in the classroom supports the regulation of both students and educational staff.

The array of high-leverage practices that are typically present in effective classrooms (e.g., rapport-building, clarity of expectations with pre-correction, positive reinforcement coupled with breadth and depth in opportunities to respond) can be further augmented through the integration of proactive brain-based approaches as highlighted in Table 1.

Structured student access and engagement in these brain-based approaches should be reflected within the behavioral expectations (e.g., PBIS classroom behavior matrix) to establish productive opportunities for regulation. Students should receive direct instruction as to what they would look/sound-like when engaging with these approaches in the classroom and be provided with opportunities to access/use each resource/tool as part of instruction. This provides clarity for all members of the learning environment and helps establish and operate a safe and engaging classroom.

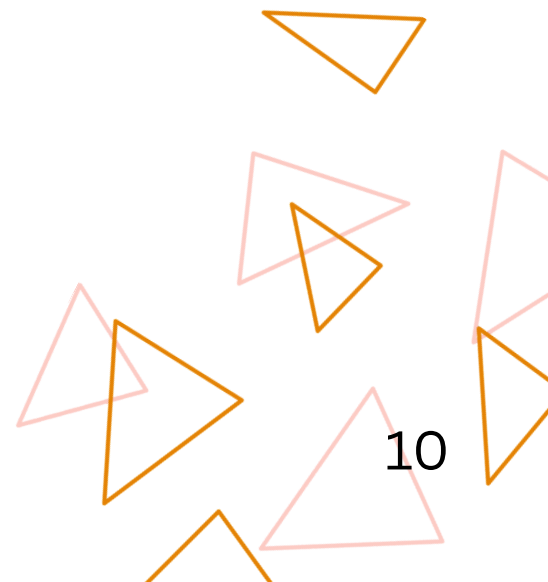


Table 1: Proactive Brain-based Approaches to Support Academic and Social- Emotional-Behavioral Outcomes

Brain-based Strategy	General Description
<u>Brain Breaks</u>	Brain breaks are brief, structured activities separate from educational content that facilitate students' brains to process while concurrently either calming them, waking them up, or preparing them to focus. Different brain breaks target different areas of the brain (brainstem, midbrain, limbic system, and cortex).
<u>Fidgets</u>	Fidgets are tools, not toys, that can help students with focus, stress relief, and self-regulation. Structured access and use can be helpful for students with sensory input needs to help them channel energy and enhance concentration.
<u>Flexible Seating</u>	Flexible seating can improve self-regulation by fostering comfort, empowerment by offering choices in seating, and facilitating engagement. Flexible seating can foster student self-awareness of what works best for them in the classroom.
<u>Movement</u>	Incorporating movement within instruction can enhance student engagement, focus and learning. Movement stimulates the release of neurotransmitters that enhance cognitive functioning.
<u>Calming Spaces</u>	Providing a designated area for students to proactively access to de-stress as well as regulate their feelings and actions supports student wellbeing and learning. Students should not be sent to the calming area as part of disciplinary procedures. However, students can lose access to the calming space, based on their actions, if necessary A calming space contributes to a positive and supportive learning environment by helping students recognize what is going on for them and how to respond and calm their bodies.
<u>Lighting</u>	Thoughtful planning about lighting can help to create a supportive learning environment by promoting wellbeing, improving focus and attention, and optimizing physiological processes. Specifically, installation of filters over fluorescent lights promotes a more positive emotional experience in the classroom (Yuen et al., 2023). It is important to choose light filters that effectively reduce glare, block harmful UV rays, and create color-balanced in the educational setting.
<u>Music</u>	The intentional use of music to leverage how music affects the brain can enhance learning by creating a calming while engaging learning environment. Use of music can affect heart rate (beats per minute-BPM). Selecting music that reflects between 50-70 BPM is ideal to establish a state of relaxed alertness. Using music to energize students should minimally reflect between 80-90 BPM, while music to calm students should reflect between 30-50 BPM.

Re-direction Procedures

Building on these preventive approaches, it is important to address how to engage in re-directing a student's contextually inappropriate behavior in an effective manner. There are two essential methods of interaction in such circumstances: Planned Ignoring (sometimes referred to a "Pivoting") and Stop-Redirect-Reinforce.

The initial decision required by the teacher in this type of situation is determining the level of undesired student behavior that is occurring, which includes an understanding of the student's skill-level to meet the behavioral expectation. This determination, and subsequent intervention, is heavily influenced by the teacher's own degree of resiliency at that time coupled with their own capacity to self-regulate their own feelings and behavior.

One can generally categorize student behaviors of concern in two ways: nuisance-level (or inconsequential) or problem-level (consequential). Nuisance-level behavior is best addressed through planned ignoring, which is sometimes referred to as pivoting. Problem-level behavior should be addressed through a Stop-Redirect-Reinforce procedure that reflects a brain-based approach.

PLANNED IGNORING/PIVOTING

Implementation of this procedure avoids drawing attention to the student of concern while they are engaging in the nuisance-level behavior (e.g., brief off-task behavior). The opportunity to reinforce occurs as a result of the use of the student of concern being aware of reinforcement being delivered to other students engaged in desired behavior (e.g., on-task) followed by reinforcement of the desired behavior by the student of concern once they engage in on-task behavior. In this context, primary emphasis of a brain-based approach is the teacher self-regulating their own behavior when observing the nuisance-level behavior (e.g., consciously keeping things in perspective coupled with using self-calming procedures such as breathing techniques to minimize the chances of over-reaction/over-intervention).

STOP-REDIRECT-REINFORCE

The standard components of this procedure include directly interacting with the student to help them to stop the problem-level behavior, redirecting the student to engage in a more desired/less disruptive behavior that is within their skill-level (the redirection can, and many instances should, reflect utilization of calming tools/techniques), then reinforcing them for complying with the redirection (Stop "X," Do "Y" which can include asking the student if they need help doing "Y" followed by reinforcement contingent on exhibition of "Y"). When directly

interacting with a student of concern we want to be cognizant of the 3 Rs of the neuro-sequential model: first help them to regulate (calm them self), then relate (reassure them), in order to reason (apply problem-solving to comply with the redirection). Concurrently, in order to successfully de-escalate the situation, the teacher self-regulates their own behavior in a parallel manner as was described associated with planned ignoring/pivoting to minimize the likelihood of exacerbating the situation resulting in further problem-level behavior.

Aligning Brain-based Approaches Within Tier 2 of I-MTSS

The incorporation of brain-based strategies within the context of tier 2 practice, which builds upon tier 1 application in the classroom, supports the regulation of both students and educational staff. The array of evidence-based practices to support academic and social-emotional-behavioral outcomes can be further augmented through the integration of brain-based approaches as highlighted in below.

ACADEMIC EXAMPLE: MATH THAT GENERALIZES TO OTHER TARGETED CURRICULAR AREAS

Layering on top of the brain-based strategies of optimal learning highlighted in tier 1, teachers can further integrate approaches that reflect the neuro-sequential model with students receiving tier 2 supports to address challenges to their academic engagement (e.g., supplemental small-group instruction that provides additional instructional time and differentiated supports with students struggling with particular math concepts/skills within a relationally rich academic community). Part of this tier 2 support is a recognition of the student's need to be in a regulated brain state plus an identification of missing or underdeveloped executive functioning skills which would allow for goal directed volitional control of attention toward the academic subject of concern. For example, proactive, targeted instruction should occur with these students on 1) a general understanding as to how their stress-response system works, and 2) their preferred self-calming techniques when feeling frustrated or stressed during math. General orientation to how their stress-response system works could be delivered through small group or individual instruction via the preferred modality (traditional, virtual, and/or hybrid delivery). This general orientation can be coupled with targeted instruction in the students' preferred self-calming technique (e.g., box-breathing, use of a fidget or movement through alternative seating). Use of regulation skills will be most effective when the student is in a context of a relationally connected environment. It is important to provide the student with small relational connections (e.g., greeting by name or short informal chat at the beginning of math class) paired with a reminder to ask for help as needed coupled with use of their preferred self-calming strategy.

For identified underdeveloped executive functioning skills, such as emotional tolerance because they have continually failed at math, the student should be given an opportunity for growth which remains in their zone of proximal development. For example, presentation of high-stress inducing (threatening) subject matter such as 10 math problems per sheet should be differentiated by reducing the number of problems and/or interspersing some problems with which the student will find easy and feel successful paired with a few difficult ones.) The exposure to content which is likely to produce a negative emotional response can be slowly increased as the student develops an ability to tolerate the feelings or threat related to the academic context. Lastly, it continues to be important for the teacher to be self-regulated. Building a relationship with students will increase compassion for students' difficulties and make self-regulation for all parties easier. Mindfulness of their own regulation/dysregulation will help teachers notice their students' similar dysregulation. This provides an opportunity for co-regulation (student and teacher regulation) and relationship building that facilitates better reasoning for academic endeavors.

SOCIAL-EMOTIONAL-BEHAVIORAL EXAMPLE: STUDENTS ENGAGED IN CHECK-IN/CHECK-OUT, SOCIAL SKILLS INSTRUCTION, OR OTHER TARGETED GROUP INTERVENTIONS

As was the case with the previous academic example, schools can further integrate approaches that reflect the neuro-sequential model with students receiving tier 2 supports to address social-emotional-behavioral needs. Targeted instruction should occur with these students on 1) a general understanding as to how their stress-response system works, and 2) their preferred self-calming techniques they can employ when feeling unsettled. General orientation to how their stress-response system works could be delivered through small group or individual instruction via the preferred modality (traditional, virtual, and/or hybrid delivery). This general orientation can be coupled with targeted instruction in the students' preferred self-calming technique (e.g., box-breathing or use of a fidget). Further, for students engaged with tier 2 interventions that involve behavior ratings (Check-In/Check-Out or behavior contracts) the use of self-calming techniques can be incorporated into the behavior card/chart employed (e.g., Casey used their breathing technique to calm down when needed). Additionally, identification of students missing or with underdeveloped executive functioning skills which allow for goal directed volitional control in social contexts, may be necessary. For example, students who have difficulty with relational tolerance need opportunities for relational engagement with a regulated adult. This may mean delivery of formal Check-In/Check-Out (CICO), or informal check-ins in the event that CICO is not offered as a tier 2 intervention, with an adult relational anchor (e.g., school counselor, social worker, school nurse or emotional support teacher). These check-ins should be regularly scheduled as a "dose" of relational regulation before and after difficult social time or in low-frequency/less-structured contexts (e.g., school assemblies or lunch period). This regulation approach, which can be integrated within CICO or operated independently if necessary, should be monitored and reported as a means of evaluation and further tailoring of the tier 2 supports. Lastly, and as was the case with targeted academic support, co-regulation and relationship leads to development of social reasoning skills.

It is noteworthy that there is alignment and a great degree of similarity across the academic and social-emotional-behavioral descriptions provided in Table XXX. A hidden value in brain-based approaches is their generalizability across contexts. This applicability across a variety of situations is relevant for both students and educational staff.

Aligning Brain-based Approaches Within Tier 3 of I-MTSS

The incorporation of brain-based strategies within the context of tier 3 practice, in a manner consistent with both tier 1 and 2 applications, supports the regulation of both students and educational staff. Specifically, academic and social-emotional-behavioral outcomes can be further realized through the integration of brain-based approaches nested within individual-intensive (tier 3) support as highlighted below.

ACADEMIC EXAMPLE: MATH THAT GENERALIZES TO OTHER TARGETED CURRICULAR AREAS

Layering on top of the brain-based strategies highlighted in tiers 1 and 2, schools can further integrate approaches that reflect the neuro-sequential model with students receiving tier 3 supports to address challenges they are experiencing in math (e.g., providing individualized and differentiated instruction that increases frequency and duration of interventions coupled with use of specialized problem-solving tools that address particular math concepts/skills). Tier 3 supports emphasizing a relationally rich context promote the development of a growth mindset with the student in tandem with practicing fact retrieval through games, peer tutoring, and individualized instruction. Given the likelihood that engagement in math may have a triggering effect on the student as a result of their prior experiences, explicit individualized instruction should occur on 1) their brain structure/functioning and their stress-response system, 2) self-awareness of unique things that trigger their fight-flight-freeze response coupled with skills to navigate those life-experiences, and 3) identification and use of their preferred self-calming techniques they can employ when feeling stressed (e.g., their preferred breathing technique and/or fidget coupled with access to a safe calming space during math) as well as an individual who can provide cues of safety and regulation through relational connection. Direct personalized-instruction in these three inter-related aspects of programming can be delivered through the student's preferred modality (traditional, virtual, and/or hybrid delivery).

Further, providing the student with multiple planned periodic pre-corrections (reminders) throughout the math class or during math activities to ask for help as needed (which would likely result in a cue of relational safety) coupled with their use of their preferred self-calming strategy is recommended. Identification of specific and hierarchically organized executive functioning skills that will most assist in academic engagement is necessary for creating planned developmental opportunities. Lastly, it is important for the teacher to be sufficiently self-regulated in order to regulate students in need of tier 3 supports, which includes development of relationship and provides an opportunity for development and use of reasoning skills.

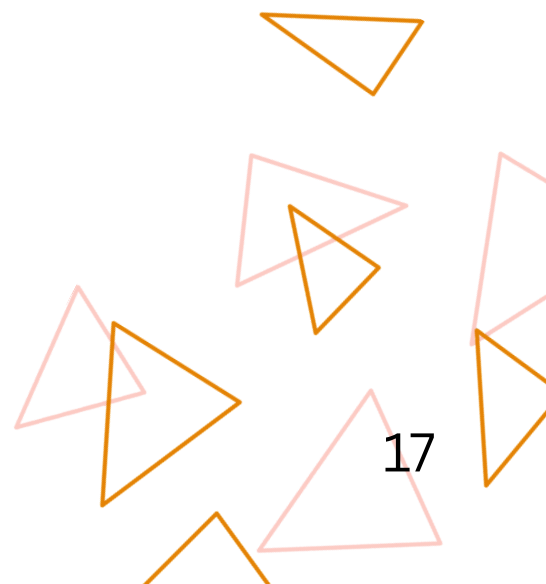
SOCIAL-EMOTIONAL-BEHAVIORAL EXAAMPLE: INDIVIDUALIZED POSITIVE BEHAVIOR SUPPORT PLAN (PBSP) AND/OR WRAP-AROUND APPROACH

Schools can, as well, further integrate approaches that reflect the neuro-sequential model with students receiving tier 3 supports to address social-emotional-behavioral needs. Explicit, individualized instruction within a relationally rich environment should be reflected in the PBSP and/or Wrap-Around Plan in an age-appropriate manner emphasizing 1) their brain structure/functioning and their stress-response system, 2) self-awareness of things that uniquely trigger their fight-flight-freeze response coupled with skills to navigate those life-experiences, and 3) identification and use of their preferred self-calming techniques they can employ when feeling unsettled. Direct personalized-instruction of these three inter-related aspects of programming can be delivered through the student's preferred modality (traditional, virtual, and/or hybrid delivery). Given the high likelihood that one feature of tier 3 programming will include behavior ratings (e.g., self-reflection/evaluation by the student as to their brain state and therefore their behavioral responses across learning environments), both proactive as well as reactive skill development should be targeted as learning outcomes (e.g., instruction the student in skills that can use to minimize exposure to identified triggers/risk factors and skills they can use to mitigate the negative affect of those triggers in the event that exposure occurs, coupled with strategies the student can use to increase protective factors/cues for safety in their life). Relatedly, the identification of triggers which lead to a threat responses should emerge through the functional behavior assessment process which guides the development of the PBSP and/or Wrap-Around Plan. Additionally, the functional behavior assessment can be used to target missing or underdeveloped executive functioning skills and should include a plan for practicing skills within a student's zone of proximal development. Acknowledging the frequency of triggers and the skill level of the student will indicate the requirement of staff support at tier 3. The resulting personal safety and crises intervention plans should clearly reflect the ordinal nature of the 3Rs to first address dysregulation and ensure there is a relational cue of safety which will allow opportunity to practice underdeveloped executive functioning skills in the social emotional realm. Also, as was the case with individual-intensive academic support, it is important that the teacher be sufficiently self-regulated in order to apply the 3Rs with students receiving tier 3 supports. Self-regulation for staff providing this level of intensive support may require a brief substitute staff member who can offer breaks and access to a calming area.

Once again, the degree of alignment and generalizability are noteworthy across the academic and social-emotional-behavioral descriptions provided. This feature can enhance student and educational staff motivation given that once these skills are acquired and fluency is achieved, they will be relevant throughout the typical ebb and flow of daily routines.

Conclusion

Schools, and particularly classroom teachers as well as other front-line instructional staff, are faced with the ever-growing need to address the academic and social-emotional-behavioral needs of their students. Integrated Multi-tiered Systems of Support (I-MTSS) reflective of brain-based approaches represents a logical extension of lessons learned through both research and practice in the fields of education and neuroscience and, in turn, provides a viable pathway to healthy student learning, growth, and development. This Practice Brief represents a step toward supporting educators in understanding the alignment between I-MTSS and brain-based approaches to instruction. Key take-aways from this Practice Brief are 1) brain-based strategies can and should be embedded across all tiers of I-MTSS, 2) integration of brain-based approaches within I-MTSS supports co-regulation of students and educational staff, 3) the relevance of brain-based strategies are highly generalizable across contexts (school, home, and community settings), and 4) brain-based approaches are compatible with positive behavior support and when combined help to create a trauma-informed learning environment.



Frequently Asked Questions

Q. HOW DOES THIS ALIGNMENT SUPPORT OTHER EXISTING OPERATIONS IN OUR SCHOOLS THAT HELPS TO PROVIDE SAFE AND HEALTHY LEARNING ENVIRONMENTS FOR OUR STUDENTS (E.G., SAP, SAFE2SAY, ACT 339 GUIDANCE PLANS)?

A. Implementing brain-based approaches across tiers of I-MTSS aligns with current requirements in Pennsylvania's schools that focus on providing safe, healthy learning environments. To illustrate, classroom-based tier 1 employment of these strategies with all students can further bolster classroom climate and support both student and staff self-regulation resulting in co-regulated learning communities. At the advanced tiers, increasing degrees of assessment-driven incorporation of these approaches fit neatly within tier 2 and tier 3 programming with students (e.g., tier 2 implementation of targeted small group instruction concerning self-regulation and tier 3 as part of a multi-component PBSP that includes systematic instruction of self-calming strategies).

Q. HOW MUCH TIME AND ENERGY DOES IT REQUIRE OF CLASSROOM TEACHERS, MANY OF WHOM ARE ALREADY OVER-WORKED AND UNDER-APPRECIATED, TO INCORPORATE THESE APPROACHES WITH THEIR STUDENTS?

A. Like any skill, acquisition and fluency increase over time the more often the skill is used. As such, incorporating brain-based strategies within lesson plans should become easier and efficient over time. The implementation of these types of approaches, as well, does not need to be overly cumbersome. To illustrate, structured implementation of a targeted brain-break at the onset of a lesson can be paired with delivery of pre-correction procedures used by the teacher to best ensure expected behavior. In a parallel manner, providing structured access to fidgets for those students with that need can be incorporated into the classroom expectations (e.g., PBIS behavior matrix clearly defining how to access and use fidgets as tools, not toys, in a manner that is not disruptive to the learning environment). With respect to redirection procedures, as previously described, helping the student of concern to first self-regulate before attempting to reason with them should lessen the likelihood of contextually inappropriate behavioral escalation and potentially shorten the behavior event all together. Additional benefit is the personal participation of self-regulation and mindfulness of teacher's own state of regulation which promotes health for teachers who are likely struggling with emotional exhaustion.

Q. WHAT TYPES OF PROFESSIONAL DEVELOPMENT WILL INSTRUCTIONAL STAFF NEED TO IMPLEMENT THESE APPROACHES WITHIN THE EBB AND FLOW OF THE TYPICAL SCHOOL DAY?

A. Professional development should emphasize a basic understanding of the brain, the neuro-sequential nature of development, and how the stress response system functions. Relatedly, emphasis should be on practical application of tier 1 strategies that reflect the neuro-sequential approach of 1) Regulate – 2) Relate – 3) Reason. Primary tier 1 approaches should be provided in a relationally rich environment and include brain-breaks, access and structured use of fidgets, flexible seating and movement, and access and structured use of calming spaces (where available). It will be important, as well, that professional development results in teachers understanding how brain-based approaches align with their existent tier 1 operations in their respective classrooms.

Q. WHAT TYPES OF SUPPORT FROM BUILDING AND DISTRICT-LEVEL ADMINISTRATORS WILL BE REQUIRED TO FACILITATE IMPLEMENTATION OF THESE ALIGNED APPROACHES WITH FIDELITY?

A. Administrators play an essential role in not only ensuring professional development for staff as previously described, but an equally important role ensuring the establishment of efficient operation of systems that support staff in implementing effective tier 1 practices coupled with functional data systems that can be used to inform practice. This includes administration and oversight of functional teaming structures within the school building (e.g., tier 1 team that reviews student data in aggregate to enhance programming as well as advanced-tier teams such as the Student Assistance Program). Administrators play a critical role by supporting classroom behavior which may look different than has been traditionally past-practice (e.g., students working on the floor, having informal relational discussions, students standing while others are sitting or using tools which may be mis-perceived as toys to the general public).

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