

POLICY BRIEF

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Teaching and Learning in the Context of Stress and the COVID-19 Pandemic

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The COVID-19 pandemic raises unique challenges and heightens existing burdens on children's Executive Functions (EFs) and ability to succeed on learning from school tasks. Executive Functions are brain functions that include attentional control, inhibitory control, and working memory.¹ These are required for many educationally central abilities such as holding information in mind (e.g. rehearsing the spelling of a word), cognitively using information held in mind (e.g. mental calculation of multi-digit arithmetic), holding attention on tasks, inhibiting distraction or impulses, switching from one task to the next, and engaging in higher order thinking².

Importantly, humans only have a limited amount of EFs that are shared between these tasks, meaning if a student is heavily engaged in using one set of resources during a learning opportunity, the student will have less ability to use their other capacities. For example, when focused on remembering instructions, thinking about an ill relative, or monitoring their teacher's feelings toward them, a student may not have the available EFs to make inferences from a text, or to try to understand why a math procedure works. *A crucial task in supporting students' learning during and after the COVID-19 pandemic will be making sure students spend their limited cognitive resources on the key thinking needed for learning rather than on non-essential aspects of classroom activities. Solve this by eliminating competing demands that create barriers to learning and higher order thinking, not reducing the challenge and quality of instruction.*

Cognitive Challenges for Learning During and After the Pandemic

EF Demands of Distance Learning. Distance learning places dramatic demands on youth's EFs: it can be difficult to keep attention focused on a lesson when other digital and real-world

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distractors are highly salient and may be the highest for children in crowded or stressed homes. Additionally, students must organize their time, plan for assignments, remember due dates, navigate technology, and get the help they need to complete schoolwork. While handling these and related barriers, for high quality learning and 21st century skills training, students must at the same time think critically, make inferences, see patterns, write arguments, and make connections to prior knowledge³. Upon returning to the classroom, teachers will be challenged to meet the differentiated instructional needs of students due to content missed during distance learning, as well as supporting students handling emotional or economic repercussions. Reducing the overall EF demands of tasks will help all students learn but particularly those with already taxed EFs.

Stress Responses engage EFs. The same EF resources that are involved in attention, engagement, and higher order thinking can also be taxed by stress.⁴ Systematic inequalities in economic stability, early experiences of high stress, genetics, trauma, and low social support are some examples of why some children will face heightened levels of stress and must exert more resources into resilience. Achievement gaps can grow when students have fewer resources to invest in their learning and if variations in coping effort are not recognized and EFs supported.⁵

Creating a visual record of class instruction can also help, such as if you use two diagrams in a science lesson, leaving them both visible through the whole class, or if you go through two example math problems, leaving them both visible rather than erasing the first when complete. This allows a student to always catch up if his/her/their mind wanders, or to do their own thinking if they are moving at a different pace from the teacher. Provide instructions and content in visual and written form without distractions. Written records of instructions and key lesson content allows learners to return to check and reload their working memory as needed.⁶

Increasing EF availability by supporting emotion regulation. Students are also spending EFs when they have worried thoughts or when they are monitoring and explicitly thinking about social relationships. Caring, positive teacher-student relationships can help students benefit from instruction that encourages higher order thinking, and some studies suggest may be particularly impactful for Black and African American children.⁷ While more difficult in circumstances such as distance learning, building social trust as well as creating opportunities for students to serve as a social network of supportive peers may be beneficial in supporting learners' resilience.

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Some work shows benefits for directly discussing how it feels to be worried or stressed and letting students know these feelings can help them learn and be turned into motivation.⁸ This can be more helpful than trying to ignore or distract oneself from thinking about negative emotions or worries.⁹ Educators might draw on popular growth mindset techniques for teaching their students that their brain is like a muscle – the more it struggles, the stronger it gets¹⁰ – to help students recognize that coping can be hard work but that brains and their functions grow and change. For older children, writing down worries that might be circling in their mind before a test can be helpful¹¹, but for younger children this can heighten these worries at least in the short term so they will need help in learning how to manage emotions. Other tools such as mindfulness and spending time in nature can be effective at resetting one's available EFs for learning.¹²

Stress and EFs in Teachers. Finally – teachers also have limited EFs, which when overtaxed, makes them less flexible to adapt to students' needs.¹³ Teachers simultaneously manage the minds and hearts of many students, some of whom may be experiencing severe stressors, as well as demands including curriculum management, monitoring administration requirements and performance reviews, and their own covid-19 related stressors. Access to and training on organizational tools and technology, support to build positive social networks with peers and administration, counseling, and restorative techniques such as mindfulness practices and breaks for time in nature can help educators to restore available EFs.¹⁴

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