

School-Based Mindfulness Interventions for Children

Mindfulness in a New Context: The Classroom

Since the turn of the millennium, there has been a significant increase in the teaching of mindfulness to children in educational settings. This has involved the development of curricula targeted at the elementary and secondary school levels and has generated the beginnings of empirical study of these interventions as well. Among the pioneers in this field is Susan Kaiser Greenland.

Trained as a corporate lawyer, Greenland found her own way to mindfulness meditation during a family crisis. She attributes her weathering of that crisis to the practice of mindful breathing. As her own children grew older, she wondered if mindfulness might also help them deal with their own stressors. She experimented with adapting her own mindfulness practice for children, and she began practicing together with her children. Soon she was also teaching other children, which eventually led to her second career as a teacher and advocate for mindfulness with children and in education. Together with her husband she founded the InnerKids Foundation, and began teaching mindfulness in public schools in Southern California since 2000. Today she travels widely speaking about the value of introducing mindfulness to children.

To hear Greenland talk about mindfulness in education, see. “The New ABCs of Learning: Attention, Balance, Compassion.”

The next video shows her Inner Kids program in action.

The Following video shows children talking about their own experience of of the InnerKids program.

For more videos featuring Greenland and her innovative teaching techniques, see the Youtube VDO section below. For additional resources on other mindfulness programs in education, see the websites for [Mindful Schools](#), [Marin Mindfulness Cooperative](#), and [The Hawn Foundation](#).

Mindfulness in Education: Issues to Consider

The issues regarding mindfulness with children are largely the same as those listed in the course “[Mindfulness with Children in Clinical Contexts.](#)” One of the main differences is the impact of developmental stages of childhood. The techniques for teaching mindfulness to children differ somewhat from the techniques used for adults. In addition, the approach to teaching mindfulness in an early childhood setting or a kindergarten classroom differs from the approach that will work with sixth graders. Curricula for teaching mindfulness in the educational context vary according to the age group being taught. (For information regarding training on a leveled mindfulness curricula for elementary school children contact [Mindful Schools.](#))

A second issue specifically for the public school setting is that of separation of church and state. Mindfulness is most often associated with Buddhism, although similar practices can be found in all the major religions of the world. But because public schools receive funding from the state, mindfulness taught in schools needs to be completely secularized. As such, it’s Jon Kabat-Zinn’s secularized approach to mindfulness, epitomized in his “Mindfulness Based Stress-Reduction (MBSR) protocol (See course on [MBSR.](#)), that has been the model for school-based mindfulness curricula. Vocabulary used also needs to be tailored in a secular manner. For example, in the Mindful Schools curriculum, practices that are secularized versions of such Buddhist practices as lovingkindness are referred to as heartfulness to avoid any confusion with religious tradition. These practices, which include compassion, empathy, generosity, and gratitude, are, of course, widely accepted as societal values independent of any religious context. Even the term ‘meditation,’ which for many people has a religious or spiritual connotation, is not used in the public school setting. For example, Greenland, when asked if students are meditating, replies that she doesn’t know, and that it’s not relevant to her because she’s not teaching meditation, but rather mindfulness.

Executive Function

Research on mindfulness in education is still in its infancy. One of the main lenses through which mindfulness in education is currently being studied is that of executive function (EF). Executive function is a set of cognitive abilities that together play a central, though often under-addressed, role in the school setting. As the name suggests, EF serves to help us direct our efforts towards the completion of a task or achieve a goal. As such, metaphors that are sometimes used to describe EF are that of a corporate CEO, the conductor of a symphony orchestra, or a principal of a school. In the context of teaching mindfulness in the classroom I sometimes use EF as a concept to describe how mindfulness works with higher grade levels. In this context I usually mention that the teacher is responsible for the EF in a classroom or the principal is for the whole school.

A common list of the components of EF includes the following:

- Sustained attention
 - The ability to stay focused on the task at hand.in the face of alternatives or distractions.
- Working memory
 - Holding information in mind so that it can be used for later activities, e.g., remembering multi-step instructions to complete a task.

- Organizational skills
 - Arrange elements into a functioning whole.
 - Keep track of commitments and responsibilities such as chores and homework.
- Planning and prioritizing
 - Thinking ahead.
 - Recognizing logical sequencing.
 - Recognizing the hierarchy of importance.
- Setting goals and persistence in their pursuit
 - Persistence towards completion of a goal
- Time management
 - Follow a schedule
 - Estimate time to complete a task and allot that time.
- Task initiation
 - Initiate a task w/o procrastination
- Metacognition
 - Self-monitoring, self-assessment
- Cognitive Flexibility
 - The ability to adapt to changing circumstances
- Emotional control/impulse control/ response inhibition
 - Sustain effort in the face of frustration
 - Ability to stop or delay an impulse
 - Express rather than act out in response to strong emotion
- Social Thinking
 - Label and describe one's own feelings and their causes
 - Understand the needs and perspectives of others
 - Understand and use nonverbal cues and social conventions
 - Show care and concern for others

The working together of these separate functions helps us to get where we want to go, to complete what needs to be completed, and to maintain relationships. (For details concerning these categories of EF, see Krates-McKinnon, S. (2011) [How your children learn: Executive functions: The new intelligence.](#))

Neuroimaging research has shown that these functions are generally associated with the pre-frontal portion of the cerebral cortex and serve to manage the activities of other parts of the brain. fMRI studies show that the pre-frontal cortex is one of the main areas of the brain that becomes more active during mindfulness practice. Anatomical research also supports the theory of neuroplasticity which states that the parts of the brain that get used in mindfulness increase in thickness and connectivity. In fact in adults, simply learning and practicing mindfulness for the duration of a two-month MBSR course was found to be “associated with changes in gray matter concentration in brain regions involved in learning and memory processes, emotion regulation, self-referential processing, and perspective taking.” (Hozel, B. (2011) [Mindfulness practice leads to increases in regional brain gray matter density](#), from abstract.)

In another study, the simple labeling of affect, taught as a tool employed in the cultivation of mindfulness, resulted in “enhanced prefrontal cortical regulation of affect” leading to “reduced bilateral amygdala activity.” The amygdala is a part of the middle brain associated with emotions. (Creswell, D., et al. (2007) [Neural correlates of dispositional mindfulness during affect labeling.](#))

Given their clear relationship to the brain and in light of the past decade's focus on the plasticity of the brain, one can easily see how the various components of EF might be strengthened through mindfulness training. In fact, research on adults offers much evidence in support of this view. For example, in one study by Valentine and Sweet, mindfulness training was found to increase *sustained attention*. (Valentine, E. and Sweet, P. (1999) [Meditation and attention: A comparison of the effects of concentrative and mindfulness meditation on sustained attention](#))

In their overview of the benefits of mindfulness in the context of psychotherapy, Davis and Hayes (Davis, D. and Hayes, J. (2011) [What are the benefits of mindfulness? A practice review of psychotherapy-related research](#)) list other empirically supported benefits of mindfulness in adults that match the EF list above including:

- *Metacognition*
- *Working memory*
- *Emotional regulation*
 - Mindfulness leads to emotional control, impulse control, and response inhibition
- *Social Thinking*
 - Mindfulness practice leads to increased empathy/compassion
- *Cognitive flexibility*
 - Decreased automatic responses leading to greater *flexibility*

Studies of Mindfulness in Children

In light of these research findings, it is not surprising that attention has been focused on mindfulness training as one way to develop these critical capacities in children. In fact, several research studies on this topic have already been completed with elementary school students.

In 2010, Flook et al. followed 64 seven to nine year olds before and after their participation in a program of mindful awareness practices developed by InnerKids, a southern California non-profit devoted to teaching mindfulness to children. The InnerKids curriculum consists of 16 eight-hour lessons taught over an eight week period. (A detailed description of the curriculum can be found in an appendix to the research article.) Data that was collected came from questionnaires filled out by both teachers and parents. Results showed that participants demonstrated significant gains specifically in the areas of behavioral regulation, meta-cognition and overall global executive function. Of particular note is the fact that those students who started with the lowest executive function scores made the greatest gains, a also pattern mentioned in other similar studies. In addition, since reports of both teachers and parents showed similar effects, the gains in EF by these students seem to be generalizable to all life contexts. (Flook, L., et al. (2010) [Effects of mindful awareness practices on executive functions in elementary school children](#))

In a similar study the same year by Desmond and Hanich of 40 sixth graders from an urban low-income middle school in Pennsylvania, a different mindfulness curriculum, [Wellness Works in Schools](#), adapted from the Mindfulness-Based Stress Reduction (MBSR) curriculum developed by Jon Kabat-Zinn at the Center for Mindfulness in Medicine, Health Care and Society at the University of Massachusetts Medical School in Worcester. (See course on [MBSR](#).) The intervention consisted of weekly lessons for a period of 10 weeks. (See the website for more details concerning this mindfulness-in-education curriculum.) The researchers measured a number of executive function variables: 1) inhibiting, 2) shifting, 3) emotional controlling, 4) initiating, 5) working memory, 6) planning & organizing, 7) organizing of materials, and 8) monitoring. These areas were assessed utilizing three general measurements: a) behavioral regulation, b) metacognition, and c) global executive function, a composite of the previous two. Results showed that students receiving the curriculum in this study demonstrated a significant increase in the subscale area of shifting/flexibility and were trending towards increases in the general areas of metacognition and global executive function. At first glance this might not seem too impressive but as it turns out the results for the control group showed *declines* on all three indices. (Desmond, C. and Hanich, L. (2010) [The effects of mindful awareness teaching practices on the executive functions of students in an urban, low income middle school](#))

In a 2010 article published in the journal *Mindfulness*, Schonert-Reichl and Lawlor report on their study of the use of a mindfulness-based social emotional learning curriculum called MindUP with students in grades 4-7. The MindUP curriculum takes a Positive Psychology approach, teaching students basic mindfulness skills integrated with social and emotional learning. The authors' research revealed that, compared to a control group, students receiving the MindUP curriculum showed both increased optimism and positive affect, as well as decreased externalizing behaviors. For students in younger grades, self-concept also was significantly improved, although in this area the result was less robust for pre-adolescent 6th and 7th graders. (Schonert-Reichl, K. and Lawlor, M. (2010) [The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence](#)) For more information about the MindUP curriculum used in this study, see [The Hawa Foundation](#).

In 2005, Napoli, Krech and Holley published the results of their study on the effects of a mindfulness intervention called the Attention Academy with 1st to 3rd graders. The subjects demonstrated better selective attention (the ability to pick and choose what to pay attention to), but were not different from controls on sustained attention (the ability to stay with a particular chosen focus of attention over a sustained time period). Those receiving the mindfulness intervention also showed less test anxiety and their teachers reported fewer ADHD type symptoms. (An ADHD behaviors measurement was used to track behaviors even though the test subjects themselves were randomly chosen 1st to 3rd graders, and thus not a group chosen for clinical ADHD symptoms.) (Napoli, M., Krech, P., and Holley, L. (2005) [Mindfulness training for elementary school students: The attention academy](#))

In a 2011 literature review on programs designed to improve EF, Diamond and Lee list mindfulness programs among those that demonstrated increased EF. The authors identified the public school setting as the most viable context in which to impact EF since schools can reach the most children early in their lives. The authors concluded that focusing narrowly on the specific skill that make up EF is not the best way to develop it. Rather programs that emphasize social and emotional development along with physical exercise are the most promising strategies. In addition, when designing curricula they recommend an approach that emphasizes exercises designed to improve EF throughout the day rather than focused in discrete modules. As they note "repeated practice produces the benefits" (p.964). (Diamond, A. and Lee, K. (2011) [Interventions shown to aid executive function development in children 4-12 years old](#))

Importance of Mindfulness in Public Education

To summarize, the early research has shown that school based-interventions have the potential to positively impact the mental health of students in many ways, including improvement in certain aspects of executive function, such as metacognition, impulse control, cognitive flexibility, sustained attention, and social thinking, deficits of which contribute to numerous childhood mental health diagnoses. As such, teaching mindfulness in schools, especially public education, represents a huge potential for a large-scale approach to addressing childhood mental health issues. In addition, teaching mindfulness, a skill that has been clearly shown to have many benefits for the mental health of adults (See course entitled [Mindfulness as a Complementary and Alternative Medicine](#)), to the next generation early in their lives could have positive implications for the future of adult mental health, as well. As such, mindfulness in education is an area where mental health clinicians and researchers should take an active role.

Resources

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Other Web-based Resources

An [overview of executive function](#) from the perspective of academic skills.

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