

## Mind Up in the 8/9 Classroom 2013-2014

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(with support from administration)

### **Introduction:**

Engaged students are more attentive to learning. When students are organized and are managing their work and work spaces they are more effective learners. Many students are able to manage their thoughts, actions, and emotions in positive and productive ways. However, there are some that struggle to manage these executive functions in a way that is supportive of learning.

### **Goal:**

The goal of this project is to develop students' executive function skills and increase student engagement

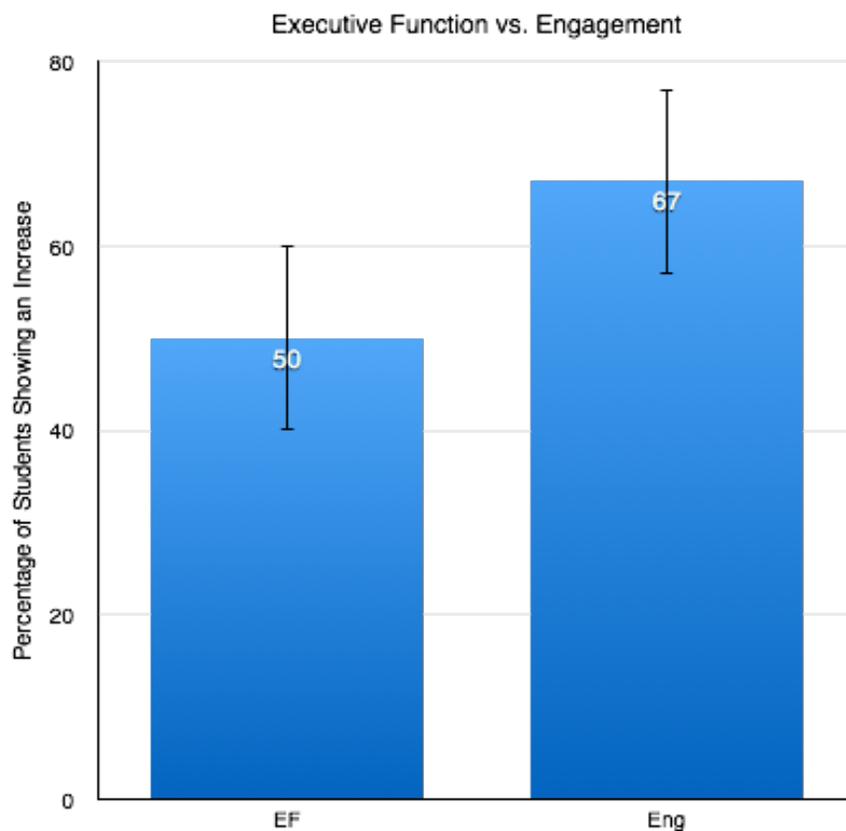
### **Strategies:**

- a. The MindUP curriculum will be used as a base for the student health program. MindUP is a comprehensive, classroom-tested, evidence-based curriculum framed around 15 easily implemented lessons that foster social and emotional awareness, enhance psychological well-being, and promote academic success.

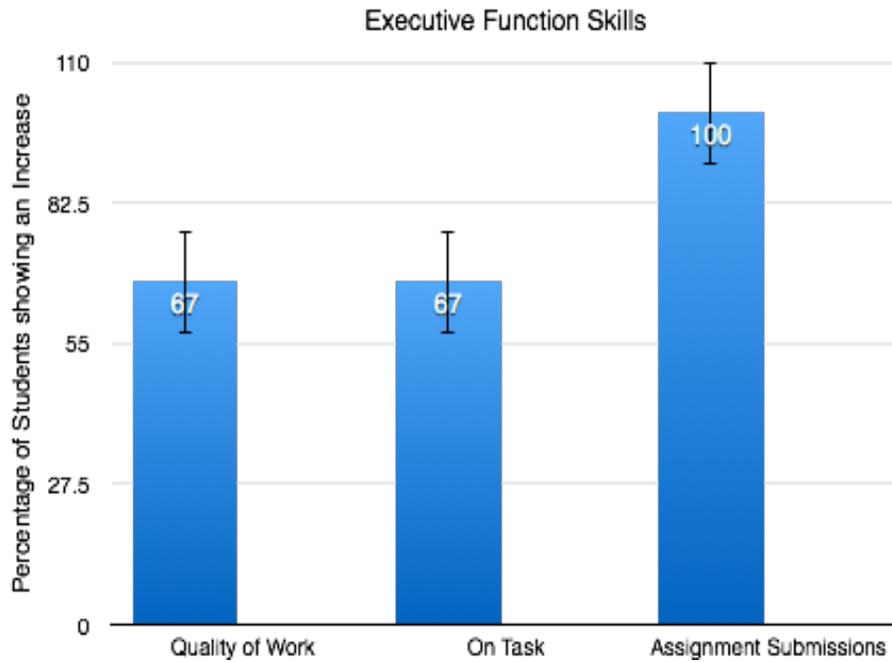
The MindUP classroom is an optimistic classroom that promotes and develops mindful attention to oneself and others, tolerance of differences, and the capacity of each member of the community to grow as a human being and a learner. MindUP's expansive dynamic is built to a large extent on routine practices that are inherent to the MindUP Curriculum. Over the course of the MindUP experience, students learn about the brain and how it functions, in the process gaining insight into their own minds and behaviors as well as those of the people around them.

- b. The Behavior Rating Inventory of Executive Function (BRIEF) is a questionnaire completed by parents and teachers of school-aged children. The BRIEF will be used to establish a baseline and evidence of growth of executive function. It is designed to provide a better understanding of a child's self-control and problem-solving skills by measuring eight aspects of executive functioning. The executive functions are mental processes that direct a child's thought, action, and emotion, particularly during active problem solving. Specific skills include (a) selecting appropriate goals for a particular task, (b) planning and organizing an approach to

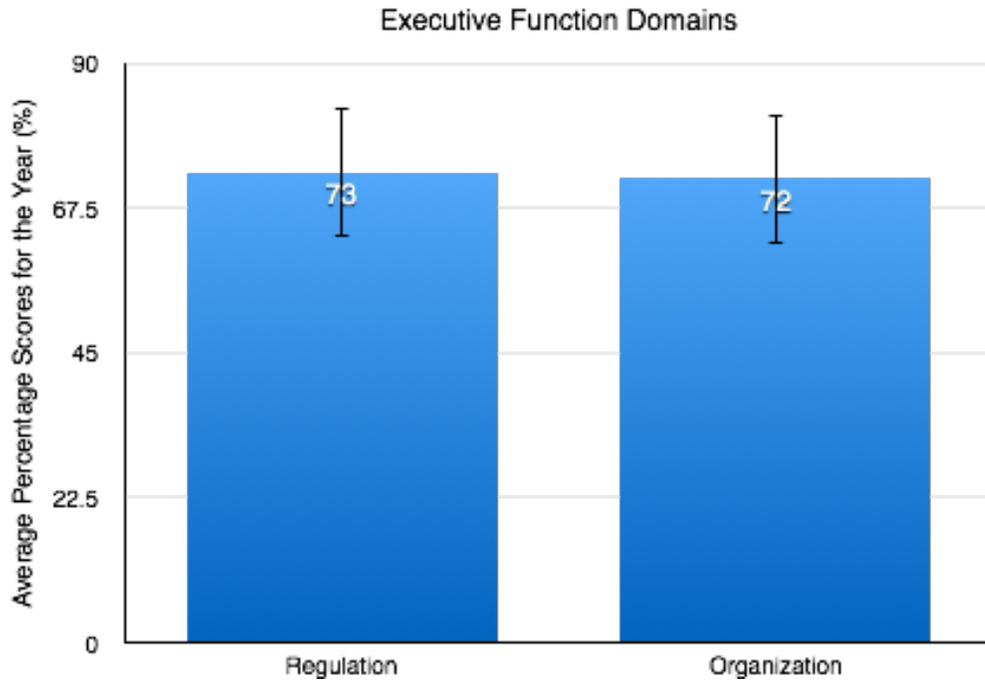
problem solving, (c) initiating a plan, (d) inhibiting (blocking out) distractions, (e) holding a goal and plan in mind, (f) flexibly trying a new approach when necessary, and (g) checking to see that the goal is achieved. The executive functions are also responsible for controlling a child's emotional responses, thereby allowing for more effective problem solving.



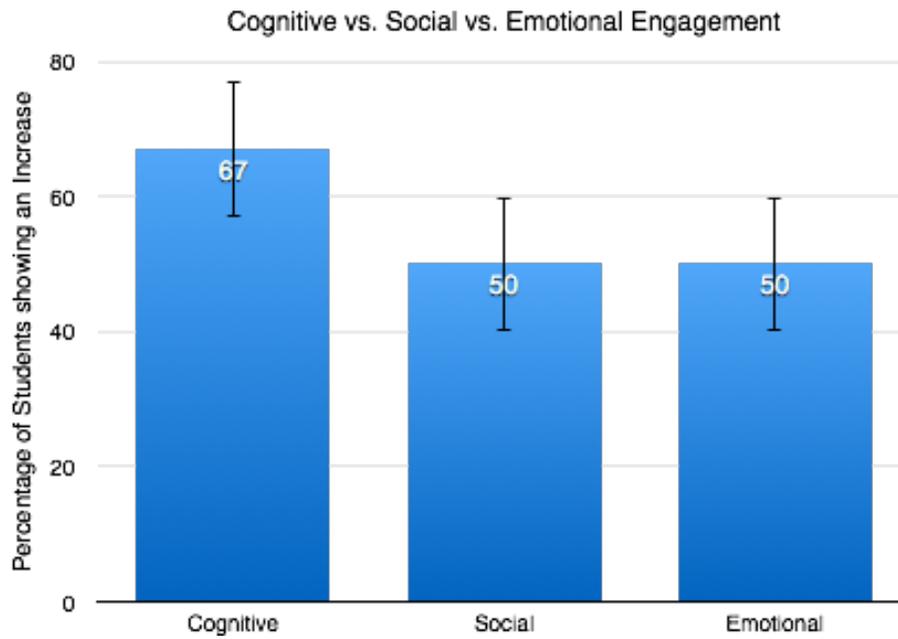
**Fig. 1.** This graph suggests that a significant number of students are showing an increase in both EF and engagement over the course of the year.



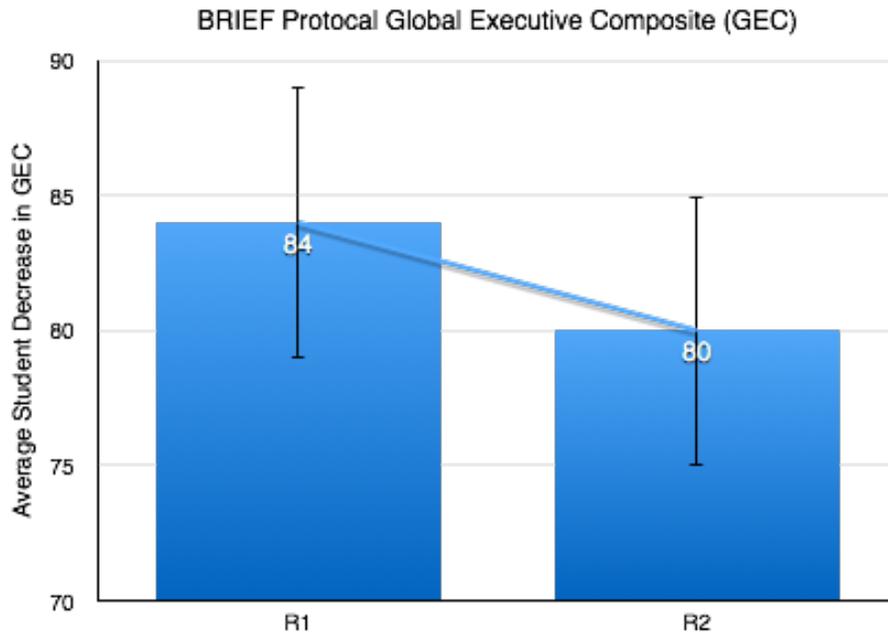
**Fig. 2.** This graph shows that there is a significant increase in the quality of work and the time spent on task over the year, however that a much greater increase in assignment submissions presents than in the quality of work of the assignments handed in and the time spent on task.



*Fig. 3.* This graph indicates that the percentage of students showing an increase is significant and comparable across each EF domain.



**Fig. 4.** This graph indicates that there is a significant increase in the social and emotional engagement domains, and an even greater increase in the cognitive engagement domain.



**Fig. 5.** This graph identifies a decrease in the BRIEF global EF composite from report period 1 (R1), November 2013, to report period 2 (R2), May 2014.

### **Conclusion & Discussion:**

- MindUp was used as a basis for their health program, which was integrated into the physical education program and tied into science. Students learned about basic brain function in relation to external stimuli, initial reaction to the stimuli by the brain, and how the brain controls and remembers. In doing so students were taught that they have control over how they react to situations.

Strategies were then taught to students to help them have control over the amygdala and brain response to stimuli. The utilization of the strategies has produced a significant increase in the executive function of these students, with an even greater increase in their engagement constructs.

Though health was taught once per week, the principles and lessons of MindUp were reiterated throughout the week. Mindfulness was a key area of focus.

- The relationship between executive function and the constructs of engagement are significant. If students are successful in the completion of required assignments, they are more cognitively engaged with what they are doing because they have understanding of what is being asked and are able to process and act upon that understanding. If students

are able to attend and focus on the lessons and interact with other students in a way that is productive in working, but also productive in socializing, then they are able to be socially engaged and as a result be more emotionally engaged.

- The first BRIEF questionnaire completed established a baseline for student executive function skills. The second BRIEF questionnaire was completed at the end of the year to provide a comparison from the start of the year. Results for the first and second questionnaire were not shown until after the second. Comparison shows a decrease in the BRIEF global EF composite from report period one to report period two, as shown in *Fig. 5*. This decrease shows an increase in EF. Though this may not be a statistically significant increase, these are students in which any increase in EF holds significant benefit.
- *Fig. 2* and *Fig. 3*, together, suggest that although there is a comparable increase in the EF domains of regulation and organization, it is organization that shows the greatest increase in the sub skills, where the organization skill assignment submissions increased by 100%, the sub skills of regulation, quality of work and time on task, increased by 67%. This suggests that the skill of organization may perhaps be a more teachable skill or more readily supported from external support than those skills of regulation. However, that the EF regulatory domain showed a comparable increase to the EF organizational domain, suggest that indeed using a program such as MindUp may in fact have some tangible impact.
- For the constructs of engagement, *Fig. 4* shows a greater increase in the cognitive construct than in the social and emotional constructs. This suggests that the increases in EF had a direct impact upon the cognitive function of the test group.
- An increase in EF should then support an increase in engagement. Indeed, *Fig. 1* indicates that a significant number of students showed an increase in both EF and engagement, but additionally that there was a greater increase found in engagement. Suggesting a possible correlation between EF and engagement, in that increases in EF may boost increases in engagement. Further study would be required to support this.

## **Bibliography:**

Flook, L., Smalley, S. L., Kitil, M. J., Galla, B. M., Kaiser-Greenland, S., Locke, J., . . . Kasari, C. (2010). Effects of Mindful Awareness Practices on Executive Functions in Elementary School Children. *Journal of Applied School Psychology, 26*(1), 70-95. doi: 10.1080/15377900903379125

A school-based program of mindful awareness practices (MAPs) was evaluated in a randomized control study of 64 second- and third-grade children ages 7–9 years. The program was delivered for 30 minutes, twice per week, for 8 weeks. Teachers and parents completed questionnaires assessing children's executive function immediately before and following the 8-week period. Multivariate analysis of covariance on teacher and parent reports of executive function (EF) indicated an interaction effect between baseline EF score and group status on posttest EF. That is, children in the MAPs group who were less well regulated showed greater improvement in EF compared with controls. Specifically, those children starting out with poor EF who went through the MAPs training showed gains in behavioral regulation, metacognition, and overall global executive control. These results indicate a stronger effect of MAPs on children with executive function difficulties. The finding that both teachers and parents reported changes suggests that improvements in children's behavioral regulation generalized across settings. Future work is warranted using neurocognitive tasks of executive functions, behavioral observation, and multiple classroom samples to replicate and extend these preliminary findings.

Gordon, D. T., Gravel, J. W., & Schifter, L. A. (Eds.). (2009). *A Policy Reader in Universal Design for Learning*. Cambridge: Harvard Education Press.

Intraindividual differences in executive functions (EFs) have been rarely investigated. In this study, we addressed the question of whether the emotional fluctuations that schoolchildren experience in their classroom settings could generate substantial intraindividual differences in their EFs and, more specifically, in the fundamental unifying component of EFs, their inhibition function.

Oberle, E., Schonert-Reichl, K. A., Lawlor, M. S., & Thomson, K. C. (2012). Mindfulness and Inhibitory Control in Early Adolescence. *Journal of Early Adolescence*, 32(4), 565-588.

This study examined the relationship between the **executive** control process of inhibition and self-reported dispositional **mindfulness**, controlling for gender, grade, and cortisol levels in 99 (43% female) fourth- and fifth-graders ( $[X\text{-bar}] = 10.23$  years,  $SD = 0.53$ ). Students completed a measure of mindful attention awareness and a computerized **executive function** (EF) task assessing inhibitory control. Morning cortisol levels also were collected and were used as an indicator of neuroendocrine regulation. Hierarchical regression analyses revealed that, after controlling for gender, grade, and cortisol levels, higher scores on the **mindfulness** attention awareness measure significantly predicted greater accuracy (% correct responses) on the inhibitory control task. This research contributes to understanding the predictors of EF skills in early adolescents' cognitive development. Specifically, it identifies **mindfulness**--a skill that can be fostered and trained in intervention programs to promote health and well-being--as significantly related to inhibitory processes in early adolescence. (Contains 2 tables, 1 figure and 1 note.)

Sasser, T. R., Bierman, K. L., & Society for Research on Educational, E. (2012). The Role of Executive Functions Skills and Self-Regulation Behaviors in School Readiness and Adjustment: Society for Research on Educational Effectiveness.

The aim of this study was to examine co-variation in the development of self-regulatory skills evident in pre-kindergarten and evaluate the implications of that variation for school adjustment in kindergarten and first grade. Measures of self-regulatory skill development included: direct assessments of EF (**executive function**) (e.g., Peg Tapping, DCCS), teacher ratings of attention functioning and impulsivity in the classroom, and observer ratings of

attention functioning during academic assessments. The study utilized a person-centered approach (latent profile analysis) to determine whether subgroups of Head Start children showed variations in profiles of self-regulatory skills during the prekindergarten year. It also assessed whether those sub-groups differed in terms of their academic and social-behavioral adjustment at kindergarten and first grade.