

**Executive Functions**  
**Essential Skills For**  
**Twenty-first Century Learners**

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**RUSH NEUROBEHAVIORAL CENTER**

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**Theme #1**  
**Experience Is The Foundation!**




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**Executive Function Skills include:**

- Goal-directed behaviors
- Organizational processes
- Self regulation
- Time-management activities
- Focusing and maintaining attention
- Strategic, critical, purposeful analysis
- Problem solving
- Flexibility and adaptability
- Self awareness
- Application to social settings




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## Executive Function Processes Educational Implications



### Foundational Skills

- Setting goals
- Planning
- Organizing Materials
- Managing Time
- Initiating/Inhibiting
- Self-awareness

### Higher-Order Skills

- Monitoring, including goals
- Self regulation
- Reflection & self evaluation
- Strategic thinking & acting, socially and cognitively
- Problem solving

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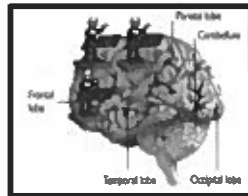
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## The Frontal Lobes: Conductors of the Orchestra

*"... (because of its) richly networked pattern of neural pathways... the frontal lobe is singularly suited for coordinating and integrating the work of all other brain structures ..."*

Goldberg, *The Executive Brain*



*"The brain is not the immutable machine we once thought it to be. ... The cellular components are flexible. They change with experience, circumstance, and need."*

Carr, *The Shallows*

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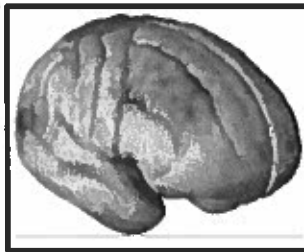
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## Brain Development

- Maturation occurs from back-to-front of the brain
- Images of brain development in healthy youth (ages 5 – 20)
- Blue represents maturing of brain areas
- Recent research indicates that frontal lobes may continue developing throughout the 20s and early 30s



Source: Gogtay, Giedd, et al. 2004

Copyright © 2004 The National Academy of Sciences, USA  
Gogtay, N., Giedd, J.N. et al. (2004)  
Dynamic mapping of human cortical development during childhood  
through early adulthood  
Proceedings of the National Academy of Sciences, 101 (21), 8174 – 8179

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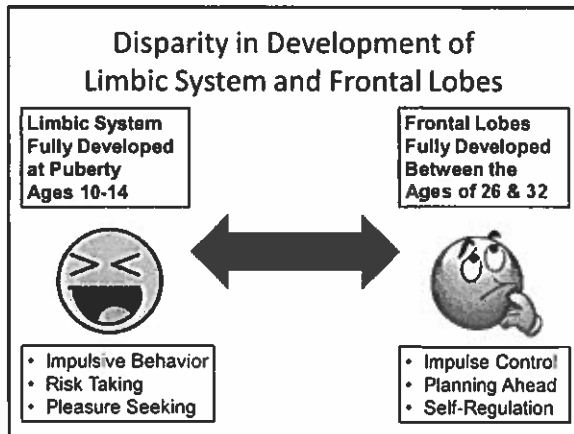
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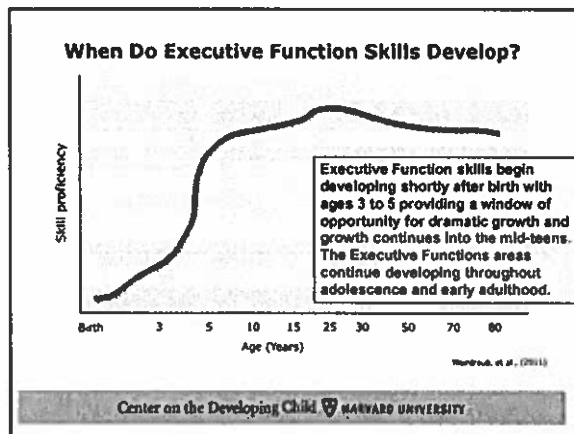
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### Educational Impact of Teaching Executive Function Skills

**Middle School and High School Research**



- Mastery of Executive Function skills is a better predictor of success in school than IQ

~ Duckworth, A.L., & Seligman, M.E.P. 2005  
*Psychological Science*

**Early Childhood Research**

- More strongly correlates with reading and math proficiency than IQ, due to working memory and ability to inhibit unfocused behavior

~ Diamond, A., Barnett, W.S., Thomas, J., & Munro, S. 2007

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## Twenty-first Century Brains Addicted to Media Multi-Tasking

### How Much Time Per Day Do Students Use Screens?

**American teenagers (13-18) average about nine hours of media use per day, excluding media use for schoolwork.**

**Tweens (8-12) average about six hours per day.**

Figure 1. On any given day, proportion of teens who spend ... with screen media





Figure 2. On any given day, proportion of tweens who spend ... with screen media



©COMMON SENSE MEDIA INC. 2015. ALL RIGHTS RESERVED. THE COMMON SENSE CENSUS: MEDIA USE BY TEENS AND TEENS

Screen time figures are based on self-reported data from 100% of teens and tweens.

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### Recent Changes in Screen Use By Younger Children



- Children under 8 have increased screen time from 15 min/day in 2013 to 48 min/day in 2017
- Children 8 and younger now spend more time on mobile screens than they do reading/being read to
- Babies under the age of 1 average of 90 min. of screen time every day

**Outcomes of Increased Screen Time**

1. Language & learning/academic delays are significant
2. Social-emotional & behavioral problems increase
3. Factors into childhood obesity in older children
4. Sleep patterns are disrupted

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### With so much media time What's Getting Short Changed?



1. Play = Problem-solving skills and creativity
2. Movement, physical activity
3. Speech & language development
4. Social-emotional learning, social skills
5. Family time, communication & community
6. Sleep




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## Executive Functions Curriculum

### Foundational Units

- Learning Environment
- Managing Materials
- Managing Time



### Study Strategies Units

- Organizing Information
- Following Directions
- Test Preparation
- Memory Strengthening
- Academic Supports



### Personal Growth Units

- Goal Setting
- Decision Making
- Learning Strengths




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## Help Structure the "Study" Environment

### Guide in organizing:

- Study Area
- Backpack
- Computer
- Filing System



### Help develop plans for:

- Establishing Routines
- Controlling Distractions

SUN	MON	TUE	WED	THU	FRI	SAT
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

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## Help Construct and Maintain a Materials System Designed for Primary and Intermediate Students

Folders keep handouts, class work, & homework organized.



Page 21  
Grades 1 & 2 : 2 folders  
Grades 3 & 4 : 3 folders



### Home Folder

- ~ Left Pocket: Family & Teacher Papers, Returned work
- ~ Right Pocket: Homework to complete/Homework to turn in




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## Help Construct and Maintain the Materials System



### Contents

1. Planner
2. Sheet protectors
3. Two-pocket folders
4. Notebooks
5. Extra paper
6. Supplies

### School/Subject Folder(s)

- ~ Left Pocket: Can be organized by subjects, using both
- ~ Right Pocket: pockets for class work, handouts, etc.

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## Filing by Unit

1. Remove returned work
2. Label unit and clamp papers together
3. File in crate (home/school)



File materials that might be needed later to prepare for tests, finals, or projects.




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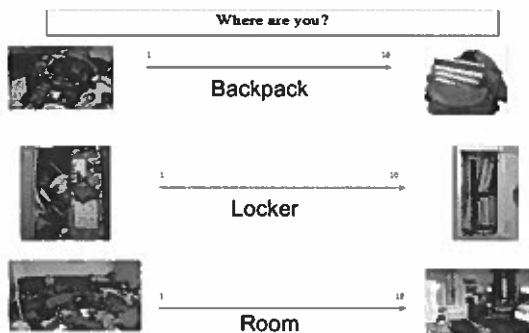
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## Organizational Continuum A Tip From Motivational Interviewing




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## Theme #2 Scaffolding Makes Learning Stick!




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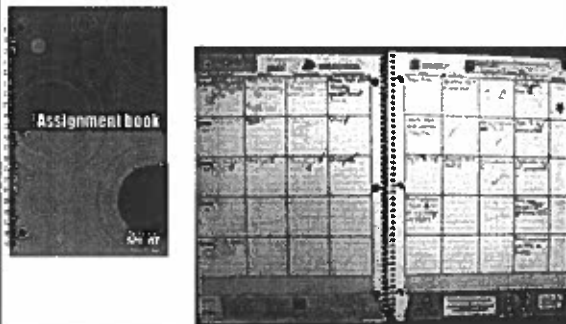
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What do most kids say when asked,  
"What do you use this for?"




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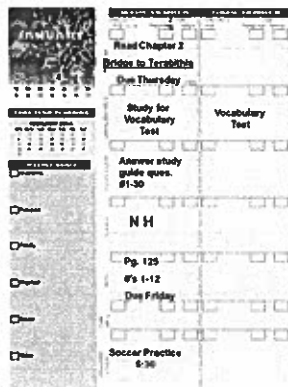
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### Filling Out the Planner

- ☒ Record Assignment
- ☒ Write NH for No Homework
- ☒ Break down long-term assignments
- ☒ Record quizzes and test dates
- ☒ Enter after-school activities




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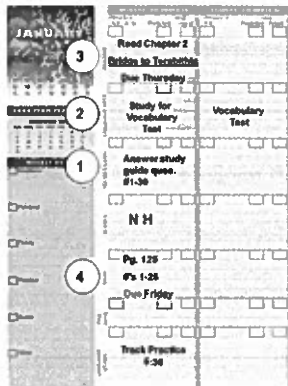
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## Prioritizing Assignments

- ☒ Organize by due date
- ☒ Start with the hardest
- ☒ Estimate time
- ☒ Check off when completed




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## TOP TEN Skills that employers look for in College Graduates



1. Ability to work in a team
2. Ability to make decisions and solve problems
3. Ability to plan, organize and prioritize work
4. Ability to communicate effectively
5. Ability to obtain and process information
6. Ability to analyze quantitative data
7. Technical knowledge related to the job
8. Proficiency with computer software programs
9. Ability to create and/or edit written reports
10. Ability to sell and influence others

... <http://www.forbes.com/sites/susanadams/2013/10/11/the-10-skills-employers-most-want-in-20-something-employees/>

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## Areas of Competence In Preschool Correlate With Future School Success



- Resolves problems (including with peers) on own
- Very good at understanding other people's feelings
- Shares materials with others
- Cooperates with peers without prompting
- Is helpful to others
- Understands the point of view stated by others
- Can give suggestions & opinions without being bossy
- Acts friendly toward others

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