

# Cultivating Executive Function Skills in Elementary Age Students

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Children's Health Council

January 23, 2018

## Companion Notes

Slide 9: Witness Growth and Development

- Children develop through the lifespan
- Brain development recognizes the stimulus in the environment
- Difference between weakness and a disability - a disability according to the ADA is a physiological or psychological brain disorder diagnosed by psychometric instruments

Slide 10: Socio-Cultural Context shows that need for schools and parents to be aware of the

- Their environment expands from home to school where learning becomes multi-dimensional
- Language of learning is complex
- Involves the ability to pause, observe, recongize, and behave accordingly to the competing stimuli

Slide 11: Integrated Perspective of EF Skills

- Prefrontal cortex has been identified mainly responsible for EF
- But it does not act alone - it's integrated network beginning from the brain stem, to the limbic system in charge of the emotional reactions -
- Important to feel safe before engaging in more complex behaviors such as planning, self-regulating, and self-monitoring

Slide 12: Definitions of Executive Function

- Orchestra conductor / traffic control
- Involves working memory, inhibitory control, mental flexibility

Slide 13: Defining the Domains of EF (refer parents to Activit 1 - Handout)

Slide 14: Executive Function Skills develop over time

- Can be learned - these are not dependent on the genetic composition rather these are learned behaviors
- Brain research shows that the brain is plastic and continues to develop
- Studies on epigenetics show that the brain generates neurons especially when engaging in aerobic exercise
- EF abilities change over the life course - throughout adolescence and through early adulthood
- Can be trained by exposure, modeling, and cueing systems

Slide 15: Center on Developing Minds at Harvard University - video

Slide 16: Simulation - Introduction - now it's time to put ourselves in the shoes of someone with EF weaknesses

Slide 17 - 18: Organization and Planning - Will need a volunteer to go through the experience of planning and organizing a task. What EF skills are necessary to perform the task?

1. Organization
  - a. Volunteer - share your experience; Audience - what did you notice?

Slide 19 - 20: Reading - Reading comprehension is a multifaceted skill.

1. Direct reading strategies must be taught to cultivate EF Skills.

2. Reading - Salmon Reading -
3. Please read the Salmon Reading
4. What EF Skills are needed for this activity?

Slide 21 - 22: Writing - Writing Task

- b. Examine this writing assignment. This was taken from the Achieve the Core website and the task was listed as appropriate for 2nd grade students.
- c. What executive function skills are assumed to be mastered to perform adequately.
- d. EF Skills address: Task Initiation, Sustained Attention, Planning, Organization, Time Management, Metacognition
- e. Difficulties: problems with opening paragraph; problems understanding the prompt; challenge with the vocabulary usage; sentence composition; etc...
- f. Assumed Skills: Idea Generation, Vocabulary usage, Transcribing: Computer vs Handwriting; Sentence writing; Review and Revise

## Developmental Tasks through the ages (Dawson & Guare, 2014)

**TABLE 1.1. Developmental Tasks Requiring Executive Skills**

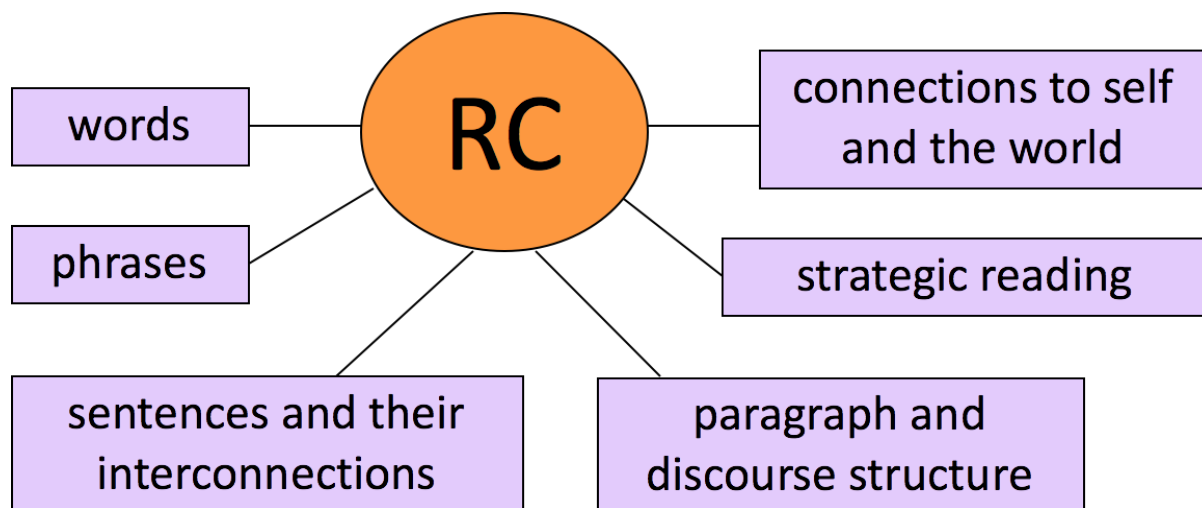
| Age range                | Developmental task  |
|--------------------------|---|
| Preschool                | <p>Run simple errands (e.g., “Get your shoes from the bedroom”).</p> <p>Tidy bedroom or playroom with assistance.</p> <p>Perform simple chores and self-help tasks with reminders (e.g., clear dishes from table, brush teeth, get dressed).</p> <p>Inhibit behaviors: don’t touch a hot stove, run into the street, grab a toy from another child, hit, bite, push, etc.</p>   |
| Kindergarten–<br>grade 2 | <p>Run errands (two- to three-step directions).</p> <p>Tidy bedroom or playroom.</p> <p>Perform simple chores, self-help tasks; may need reminders (e.g., make bed).</p> <p>Bring papers to and from school.</p> <p>Complete homework assignments (20 minutes maximum).</p> <p>Decide how to spend money (allowance).</p> <p>Inhibit behaviors: follow safety rules, don’t swear, raise hand before speaking in class, keep hands to self.</p>  |
| Grades 3–5               | <p>Run errands (may involve time delay or greater distance, such as going to a nearby store or remembering to do something after school).</p> <p>Tidy bedroom or playroom (may include vacuuming, dusting, etc.).</p> <p>Perform chores that take 15–30 minutes (e.g., clean up after dinner, rake leaves).</p> <p>Bring books, papers, assignments to and from school.</p> <p>Keep track of belongings when away from home.</p> <p>Complete homework assignments (1 hour maximum).</p> <p>Plan simple school project such as book report (select book, read book, write report).</p> <p>Keep track of changing daily schedule (i.e., different activities after school).</p> <p>Save money for desired objects, plan how to earn money.</p> <p>Inhibit/self-regulate: behave when teacher is out of the classroom; refrain from rude comments, temper tantrums, bad manners.</p> |
| Grades 6–8               | <p>Help out with chores around the home, including both daily responsibilities and occasional tasks (e.g., emptying dishwasher, raking leaves, shoveling snow); tasks may take 60–90 minutes to complete.</p> <p>Babysit younger siblings or for pay.</p> <p>Use system for organizing schoolwork; including assignment book, notebooks, etc.</p> <p>Follow complex school schedule involving changing teachers and changing schedules.</p> <p>Plan and carry out long-term projects, including tasks to be accomplished and reasonable timeline to follow; may require planning multiple large projects simultaneously.</p> <p>Plan time, including after-school activities, homework, family responsibilities; estimate how long it takes to complete individual tasks and adjust schedule to fit.</p> <p>Inhibit rule breaking in the absence of visible authority.</p>        |

**Activity 1: Write the number of the Executive Function Skill next to its definition**

|                                 |  |  |   |
|---------------------------------|--|--|---|
| 1. Response Inhibition          |  |  | The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important.   |
| 2. Emotional Control            |  |  | The ability to stand back and take a bird's-eye view of oneself in a situation. It is also an ability to observe how you problem solve and includes self-monitoring and self-evaluative skills (e.g., asking yourself, "How am I doing?" or "How did I do?"). |
| 3. Working Memory               |  |  | The ability to hold information in mind while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future.   |
| 4. Planning<br>Prioritization   |  |  | The ability to revise plans in the face of obstacles, setbacks, new information, or mistakes, or an ability to changing conditions.   |
| 5. Metacognition                |  |  | The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom.   |
| 6. Organization                 |  |  | The ability to begin a task without undue procrastination, in a timely fashion.   |
| 7. Time Management              |  |  | The ability to design and maintain systems for keeping track of information or materials.   |
| 8. Sustained attention          |  |  | The capacity to have a goal, follow through to the completion of the goal, and not be put off by or distracted by competing interests.  |
| 9. Goal Directed<br>Persistence |  |  | The ability to manage emotions in order to achieve goals, complete tasks, or control and direct behavior.   |
| 10. Task Initiation             |  |  | The capacity to think before you act; the capacity to delay or inhibit responding based on the ability to evaluate multiple factors.  |
| 11. Flexibility                 |  |  | The capacity to estimate how much time one has, how to allocate, and how to stay within time limits and deadlines.  |

Activity 2: Reading Comprehension: How would you teach your child to understand this passage? What EF skills are needed to ensure proficient understanding?

The mystery of how salmon can find their way back to their home rivers is solved. The salmon navigates by sun and stars when traveling in the ocean. When the salmon nears the general area of the river in which it was born, it uses its nose. The salmon can remember the smell of the home river that it left as a baby.



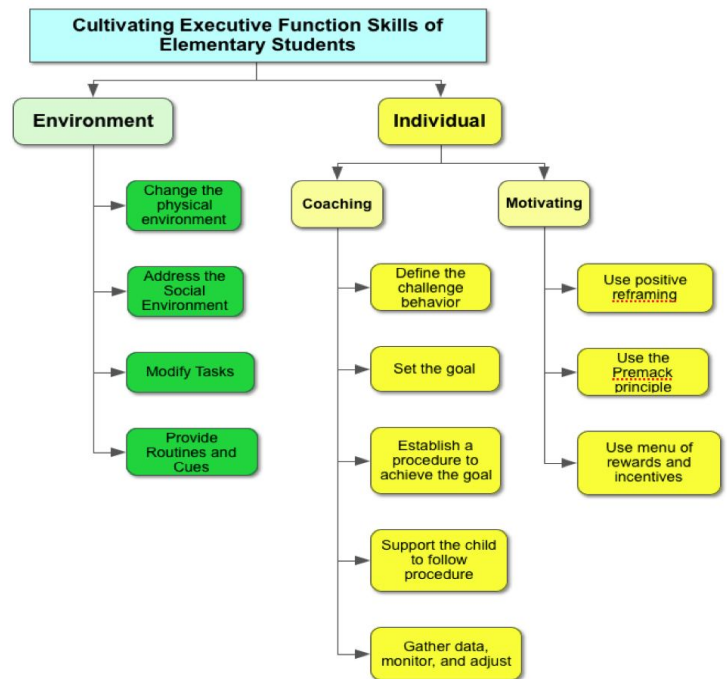
**Activity 3: Writing - Examine this writing task taken from Achieve the Core website. This was listed under Grade 2 Activities.**

***“Over the past week, we have identified many characteristics of a butterfly. Today, I want you to pick two characteristics of a butterfly that you think are important. Then, write a paragraph with at least five sentences describing the characteristics of the butterfly you selected. Use evidence from the text to explain why your butterfly’s characteristics are important. This paragraph should represent your best written work.”***

What executive function skills are needed to perform well in this task? What basic skills are called upon when asked to write?

## Cultivating EF Skills - Example

Lisa, age 9, had a very difficult time starting her homework promptly at the time her parents set for her (right after dinner). Her parents decided they needed to teach this as a skill. Every day when she came home from school, her mother sat down with her and they made out a homework plan. Lisa made a list of all her assignments and she wrote down when she would start each one. She was allowed to build in a break for one TV show. When it was time for her to start her homework, her mother pulled out the Homework Planner and asked Lisa to take a look at it. Lisa then got out the first assignment and her mother made sure she got off to a good start before she left to do other things. In the beginning, Lisa's mother praised her for following her schedule and when she completed each activity. As time went on, Lisa was able to make her schedule and follow it all by herself.



**Environmental modifications:** These are designed to help children get right to work when tasks are assigned or to begin them at a predetermined time. They include the following:

- Verbally cuing the child to get started.
- Arranging for a visual cue to prompt the child to begin (e.g., a picture taped to the desk)
- Walking the child through the first portion of the task to get him or her started.
- Noting start and stop times when tasks are assigned/completed.
- Having the child specify when he or she will begin the task
- Cuing the child when the scheduled time arrives
- Alternatively, have the child decide how he or she will be cued to begin the task (e.g., by using an alarm clock)

### Coaching the Individual and Instilling Motivation

1. Desired behavior: Begin a task promptly at some future predetermined time
2. Steps to teach the behavior:
  - a. Have the child make a written plan for doing the task. This may include writing down the assignment and deciding on a start time. For longer projects, it may mean breaking the task down into subtasks and assigning start times to each subtask.
  - b. Have the child determine what cue will be used to remind him or her to begin the task. This could include having a parent or teacher (or sibling or friend) provide the reminder, setting some kind of alarm, or using a naturally occurring event as the cue.
  - c. At the point when the child is expected to begin the task, make sure he or she does so promptly, reinforcing the child when he or she does not require additional cues beyond those he or she built into the plan. Gradually fade the supervision.

### Keys to success

1. Be diligent about consistency during the initial “habit-building” period. When this intervention breaks down, it’s usually because the system wasn’t followed consistently in the first few weeks.
2. Fade the cueing system gradually and do not hesitate to restart it if task initiation begins to fall off.
3. If the child is not quickly successful, institute an incentive system.

**Activity 4: Selecting and Cultivating EF Skills**

|  |   |
|--|---|
| <p>Step 1: Have a look at the handout of EF skills and the list of described weaknesses. Rank them and decide on 1 skill to focus on. Write the target skill.</p>      | <p>Target Skill</p>   |
| <p>Step 2: Set a specific behavioral objective. What behavior do you want to see improve?</p>  | <p>Behavior Objective</p>   |
| <p>Step 3: Analyze your environment. What aspect of the environment will you change?</p>   | <p>Environmental Adjustments</p>  |
|  | <p>Physical Surroundings:</p>   |
|  | <p>Social (if any):</p>   |
|  | <p>Task (if any):</p>   |
|  | <p>Tools and Cueing systems: (see Sample Scripts page from Handout)</p> |
| <p>Step 4: How will you get buy-in from your child? Write out your script.</p>   | <p>Coaching the Individual</p>  |
|  | <p>Define the goal:</p>   |
|  | <p>Write a reasonable goal:</p>   |
|  | <p>Routines and procedures to teach your child:</p>                     |
|  | <p>Supportive statements to encourage follow through:</p>               |
|  | <p>Monitoring systems to show progress:</p>                             |
| <p>Step 5: What incentives will you put in place to encourage the desired behavior? How often will you measure the progress and provide feedback towards progress?</p> | <p>Incentive:</p>   |



|  |  |
|--|--|
| <p>Possible Examples:</p> <ul style="list-style-type: none"><li>• For grades K-3: earning points in exchange for a “preferred” activity;</li><li>• For grade 4-5: point system for play dates, monitored screen time</li><li>• For grade 6-8: point system for play dates, monitored screen time, social time,</li></ul> | <p>Monitoring System:</p> <p>Feedback:</p> |
|--|--|