

## Executive Skills: The Hidden Curriculum

Executive skills—essential to success in school and throughout life—can and should be taught in school.

By Peg Dawson and  
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**J**ack is a bright 16 year old who can sit in class, soak up lectures, and offer insightful comments during discussions. He appears to be an eager, articulate student, for which teachers love him. Unfortunately, he has a great deal of difficulty getting his homework handed in on time. Sometimes he does it but loses it before turning it in. Other times, he simply forgets about the assignment. Sometimes his homework is so backed up that he must decide what he can finish. And all too frequently, he gets home from school with the best of intentions but gets distracted.

Emily, on the other hand, is a 14 year old with an active social life who gets completely preoccupied with the drama of her friends' lives. She may skip class to talk to a friend or go to the mall after school instead of studying for a test. When Emily actually does get down to work, she worries about the quality of her efforts. She may have a great idea for an English paper, but when she starts to write and sees that it's not going as planned, she sets the paper aside and reorganizes her biology notebook while she waits for inspiration to hit. Teachers see flashes of good work, but the absences and late assignments convince them that Emily simply isn't motivated to be a successful student.

The "underachieving" student is one of the most troublesome challenges for school administrators, teachers, and parents. Some students have identifiable disabilities, mental health problems, or personal circumstances that explain poor performance, but all too many just don't seem to care.

### What Are Executive Skills?

Many educators look at students like Jack and Emily and think, "What a waste." They assume

that if those students wanted to do better, they could. They assume that students' lack of success is simply a matter of lacking will power, determination, and good decisions. There is an element of truth to this, but experts on the neuropsychology of the adolescent brain know that it's a bit more complicated. The skills that are underdeveloped in Jack and Emily—and thousands of other underachieving students—are brain-based skills called "executive skills" that develop slowly over the course of childhood and adolescence and are not fully mature until young people are well into their 20s—even older if they have an attention disorder.

Executive skills are the skills that are required to execute tasks—to take an idea from start to finish, whether it involves cleaning one's bedroom or doing everything it takes to get into an Ivy League college. Researchers and clinicians have developed different schemes for organizing executive skills into clusters. A particularly helpful approach is to identify a set of fairly discrete skills, such as response inhibition, working memory, and emotional control.

A quick review of executive skills reveals how essential they are, not only for success as a student but also for success as a principal or a teacher. In many ways, they constitute the hidden curriculum in schools because teachers know that students need them but typically don't go about teaching them explicitly. Teachers tend to hold students accountable when they don't have executive skills but fail to recognize that the skills can be taught the same way that students are taught to perform geometry proofs, outline a book chapter, and write an essay.

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## Executive Skills and Brain Development

Development of executive skills correlates with brain development. At birth, a child's brain weighs about 13 ounces. By late adolescence, it weighs a little less than three pounds. A number of changes account for this growth. Nerve cells generate and develop branches so that they can talk to one another, with synapses connecting one nerve cell to another. The number of synapses in a young child's brain (about a quadrillion) greatly exceeds the number in an adult's brain. If development of gray matter continued at this pace, an adult's brain would be enormous. Instead, the increase in gray matter—neurons and particularly synapses—peaks before age 5 and is followed by a gradual reduction or "pruning" of the neuron connections.

Through pruning, a child consolidates his or her mental skills, and the gray matter connections that are not needed or used drop away. This period of consolidation continues until a second period of significant growth in gray matter begins around age 11 or 12, the onset of another period recognized as one of rapid learning and development. This increase is again followed by a period of reduction through pruning over the course of adolescence. Research shows that the growth spurt that takes place before adolescence occurs primarily in the frontal lobes. Frontal lobe skills develop at different rates in different students, however, and some skills come "online" faster than others. Even adults typically have both executive skill strengths and weaknesses. And by adulthood, those skills are difficult to change.

Executive function deficits also are associated with a number of psychiatric and developmental disorders, including obsessive-

## Executive Skill Definitions

**Response inhibition:** The capacity to think before acting and to resist the urge to say or do something. This ability allows a person the time to evaluate a situation and how his or her behavior might affect it.

**Working memory:** The ability to hold information in memory 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.

**Emotional control:** The ability to manage emotions to achieve goals, complete tasks, or control and direct behavior.

**Sustained attention:** The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom.

**Task initiation:** The ability to begin projects without undue procrastination, in an efficient or timely fashion.

**Planning/prioritization:** 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 is and is not important to focus on.

**Organization:** The ability to create and maintain systems to keep track of information or materials.

**Time management:** The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important. A young child can complete a short job within a time limit set by an adult. A high school student can establish a schedule to meet task deadlines.

**Goal-directed persistence:** 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.

**Flexibility:** The ability to revise plans in the face of obstacles, setbacks, new information, or mistakes. It relates to an adaptability to changing conditions.

**Metacognition:** The ability to stand back and take a bird's-eye view of oneself in a situation. It is a person's ability to observe how he or she problem solves. It also includes self-monitoring and self-evaluative skills (e.g., asking "How am I doing?" or "How did I do?").

## What Next?

The following are important questions and steps for principals to consider with their staff members when developing strategies to teach students executive skills:

- Do teachers and other staff members know the definition of executive skills and how to identify deficits? How can this information best be shared?
- How would identifying and addressing individual students' executive skills deficits fit within the school's current intervention model?
- How can the school community reinforce executive skills development for all students within the existing curriculum? How can the school community reasonably help parents reinforce this as well?

compulsive disorder, attention-deficit/hyperactivity disorder, traumatic brain injury, autism, depression, and Tourette's syndrome. Often schools are more likely to address skills deficits for students with a disability than they are with students in general education, because overcoming skills deficits is a focus of special education. This constitutes a serious lost learning opportunity for many general education students.

The message for middle level and high school administrators is very clear: executive skills emerge slowly throughout adolescence; they develop unevenly; and once adolescence is past, they are resistant to change. The middle level and high school years, therefore, are a critical period in the development of executive skills, and educators can play a pivotal role in ensuring that by the time students graduate, they have acquired not only the academic skills necessary to succeed in life but the executive skills they will need as well.

## Developing Students' Executive Skills

Educators can use three strategies to help students with weak executive skills. First, they can make instructional modifications to reduce the impact of weak skills, such as putting in place structures, routines, and organizational schemes; modifying tasks (e.g., making them shorter, making the steps more explicit, building in variety or choice, and reducing the open-ended nature of the assignment); and changing the way adults interact with students (e.g., by providing prompts, reminders, and close supervision).

Second, educators can directly teach skills. An instructional sequence for teaching executive skills looks like this: identify the skill deficit; set a goal; outline the steps to be followed to achieve the goal; turn the steps into a list, a checklist, or a short list of rules to be followed; supervise the student who is following the steps, providing feedback along the way; evaluate the program and revise it if necessary; and phase out the supervision (this last step may take longer than anticipated and should be done gradually).

Third, educators can use incentives to encourage students to use the executive skills they are learning. Incentives might be social praise (preferably specific praise that identifies what exactly the student has done that is meritorious), free homework passes, or group rewards (such as a pizza party when the class hands in 85% of all homework assigned that week). Sometimes imposing penalties can act as incentives. Some schools, for instance, require students to stay after school to complete any homework they failed to pass in that day; for students for whom going home is a powerful reinforcer, this can be very effective.

As with other learning and behavior problems, there are levels of interventions for students that vary in intensity depending on how

Figure 1

## Tiered Support

Intervention Tier	Environmental Modifications	Instructional Supports	Motivational Strategies
<p><b>Universal</b>—systems level or classroom level supports directed at <i>all</i> students and designed to meet the needs of <i>most</i> students.</p>	<ul style="list-style-type: none"> <li>■ Establish classroom routines to manage things such as using an assignment book, handing in homework, planning for long-term assignments, maintaining notebooks.</li> <li>■ Teach classroom rules for behavior (post prominently, review regularly, and practice for mastery).</li> <li>■ Set up school-wide monitoring/feedback systems (such as Power School or Teacher Ease).</li> </ul>	<p>Teach:</p> <ul style="list-style-type: none"> <li>■ Study skills necessary to meet course requirements (e.g., how to study for tests, how to break down long-term assignments into subtasks and timelines).</li> <li>■ Organizational/working memory skills (e.g., how to maintain an assignment book, how to organize notebooks, how to remember important things such as due dates, permission slips, etc.)</li> <li>■ Homework skills—how to plan homework sessions, strategies for getting started, screening out distractions, persisting until completion, avoiding temptation, and problem solving.</li> </ul>	<ul style="list-style-type: none"> <li>■ Use group contingencies to meet specific criteria.</li> <li>■ Build in fun activities following effortful classroom tasks.</li> <li>■ Make liberal use of effective praise targeted to executive skill development.</li> </ul>
<p><b>Targeted</b>—somewhat more intensive interventions to meet the needs of the 10–20 percent of students for whom universal supports are insufficient.</p>	<ul style="list-style-type: none"> <li>■ Modify assignments to increase likelihood of success (shorten, build in choice, make more closed-ended).</li> <li>■ Set up after school homework clubs.</li> <li>■ Provide weekly progress reports to inform parents of missing assignments, upcoming deadlines.</li> </ul>	<ul style="list-style-type: none"> <li>■ Set up small group coaching for at-risk students to teach them how to make and follow homework plans and provide closer monitoring to students with working memory deficits or planning or organizational problems.</li> <li>■ Institute peer tutoring programs or train volunteer tutors.</li> <li>■ Contact parents to develop a simple plan to address the problem (e.g., arranging for progress reports)</li> </ul>	<ul style="list-style-type: none"> <li>■ Home-school incentive systems (daily or weekly report cards).</li> <li>■ Require students to use free time or after school time to complete unfinished work.</li> </ul>
<p><b>Intensive</b>—for the 1–7 percent of students with chronic and more severe problems.</p>	<p>At this level, an effective intervention involves working collaboratively with parents, teachers, and students to develop an individual support plan.</p>	<p>Elements of an effective intensive intervention:</p> <ul style="list-style-type: none"> <li>■ Target behavior is well-defined and includes criteria for success.</li> <li>■ Specific environmental modifications are identified.</li> <li>■ The skill is explicitly taught, modeled, and rehearsed on a regular basis.</li> <li>■ Someone is assigned to check in with the student at least daily.</li> <li>■ The student is given a visual reminder of expectations. The student's independent use of the skill is monitored over time so that progress can be measured.</li> </ul>	

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significantly students' executive skill weaknesses affect their performance in school. These skill deficits lend themselves to a three-tiered, response-to-intervention model that has been successfully applied to academic skill deficits as well as behavioral deficits. (See figure 1.) This model presents levels of support, ranging from universal classroom supports for the majority of students to highly individualized intensive supports for students whose executive skill weaknesses are profound enough to place them in danger of failing or dropping out of school.

## **Conclusion**

Upon learning about executive skills, administrators may conclude that they are another "add-on" to the curriculum that will tax

overworked teachers still further. But executive skills are essential if students are to master the curriculum that is already in place, and they can be incorporated into instruction with relatively small modifications for the vast majority of students. **PL**

## **RESOURCES**

- *Coaching the ADHD Student*. M. M. Dawson & R. Guare. 1998. Toronto, Canada: Multi-Health Systems.
- *Executive Skills in Children and Adolescents: A Practical Guide to Assessment and Interventions*. P. Dawson & R. Guare. 2003. New York: Guilford Press.
- *Smart but Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential*. P. Dawson & R. Guare. 2008. New York: Guilford Press.

The Hidden-Curriculum " school discipline. Are schools too strict? There are many things which pupils learn in school which are not part of the timetable of official lessons. The term "hidden curriculum" is used in Britain to refer to those things pupils learn from the way their school is organized. The schools organization includes rules, such as punctuality. Pupils are usually expected to arrive at lessons, assemblies and registration on time. Some pupils would say that school rules are too strict. Dyscalculia is that condition which makes the acquisition of numeracy skills, one of the component skill of life difficult. Thus not only hampering their mathematics achievement but also it leads to a demotivating decomposition. This paper endeavours to make this "invisible disability" visible and acknowledge the need to see a bigger picture. The paper further aims to study Dyscalculia and Executive functioning (EF) and study EF in the developmental perspective and construe as the integration of three parameters ("Hill, Skill & Will") in the long run to accommodate to a better inclusivity