

Executive Function: The Key to Thinking Smart and how to Facilitate it

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EF OVERVIEW

Executive Function Involves

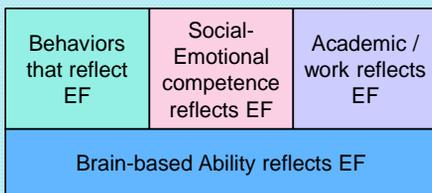
- **DEFINITION OF EF:**
 - “How you decide *what to do*”
- This means EF is a unitary concept
- EF strength or weakness is determined by a global score NOT specific aspects of EF

Executive Function Involves

- “How you decide *what to do*” demands that a person ...
 - **Initiates** a task to achieve a goal; has a **plan**;
 - organizes** parts of the task; **attends** to details to notice success of the solution; keeps information in **memory**;
 - self-monitors** the effectiveness of the plan; is **flexible** when there is a need to modify the plan; and maintains **emotion regulation** and exhibits **inhibitory control** to ensure clear thinking so that the task is completed successfully.

Four Dimensions of EF

- Executive Function is the foundational brain-based *ability* that is seen in the *behavior* of students, their *social-emotional* competence and *academic/work*.



Executive Function - Measured

- Complete EF Assessment
 - EF as **Behaviors** - Comprehensive Executive Function Inventory
 - EF as **Ability** - Cognitive Assessment System – Second Edition
 - EF as **Social Emotional** - Devereux Student Strength Assessment
 - EF as **Achievement** – Feifer Assessment of Reading



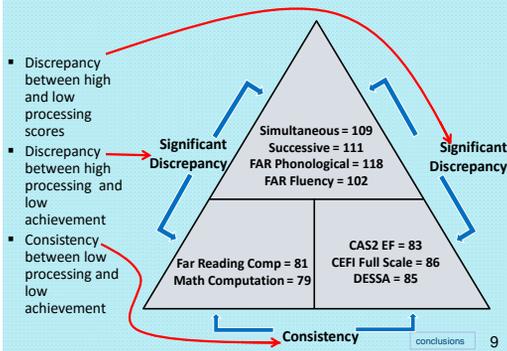
EF Assessment → Interventions

- Possible assessment results
 - Consistently low scores on the
 - CAS2 EF scale,
 - CEFI Full Scale,
 - DESSA Total score, and
 - FAR scores specific to EF
 - Mixed results on these global scores on these measures
 - Only specific areas of EF noted in, for example, the CEFI or DESSA or FAR

EF Assessment → Interventions

- The strongest indication of EF weakness –
 - A student with a deficit in EF could be identified as SLD using the Federal definition – ‘a disorder in one or more of the basic psychological processes’
 - Identification should be based on the Discrepancy/Consistency model (Naglieri 1999)
- Isolated low scores could be managed with specific interventions

SLD Discrepancy Consistency Model



EF Assessment → Interventions

- Interventions would be based on helping the student think (EF), not just remember
- The demands of everyday tasks would need to be understood from a 2-dimensional perspective...

Presentation Outline

- Comprehensive Model of EF
 - Historical Perspective
 - Definitions of Executive Function
- EF as Behavior
- EF as an Ability (an intelligence)
- EF as Social Emotional Skills
- Research about EF as ability, behavior, and SE
- **Think Smart!** -- EF Skills in the Classroom
 - More lesson plans for improving components of EF
- Conclusions

Teaching Executive Functioning Processes: Promoting Metacognition, Strategy Use, and Effort
Lynn Meltzer

Success in our 21st century society is increasingly linked with students' mastery of a wide range of academic and technological skills in conjunction with executive function processes such as goal-setting, organizing, prioritizing, shifting flexibly, holding information in working memory, and self-monitoring. **Academic success therefore depends on students' ability to plan their time, organize and prioritize materials and information, separate main ideas from details, think flexibly, monitor their progress, and reflect on their work.** This chapter includes a discussion of a theoretical paradigm (Meltzer, 2007, 2010) for understanding and teaching strategies that address these six core executive function processes. The major principles of intervention and treatment are discussed with an **emphasis on the importance of building metacognitive awareness and helping children to understand how they think and how they learn.** When schools create a culture that fosters effort, persistence, and executive function strategies, students develop self-confidence, resilience, and a strong work ethic, the gateways to academic and life success.

History Class: Saturday Night Live

- STEP 1 – View the video
- STEP 2 – Discussion of the video with someone sitting next to you.
 - Consider:
 - What was the main point ?
 - Was the goal achieved ?
 - What did the teacher do wrong ?
 - Your own questions and thoughts..
- STEP 3 – Share your ideas with everyone

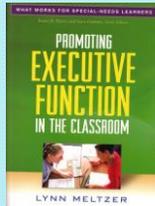


History Class: Saturday Night Live

- Teach students to think not just remember
- How to learn is just as important as what to learn
- Tell the students what you are teaching and why
- This is what Executive Function is all about
- This is the theme of today's workshop

Meltzer (2010)

- 'Classroom instruction generally focuses on Content (or the *what to know*), rather than on the *how to do or learn...*and does not address metacognitive strategies that teach students to think about *how* they think and learn'.



How to Promote EF in the Classroom

- Teach students to be metacognitive learners who think about how they think and learn
- Encourage students to keep an EF diary
- Create daily 5-10 minute discussions so that the students can share strategies they used
- Have students team up in pairs or small groups and brainstorm new strategies
- Peer mentoring the best EF strategies



EF Instruction

Promoting Executive Function in the Classroom (What Works for Special-Needs Learners) [Paperback]
Lynn Meltzer (Author)

ISBN-10: 1416523021 | ISBN-13: 978-1416523021

List Price: \$35.00
Price: **\$30.45** & this item ships for **FREE with Super Saver Shipping**. [Details](#)
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Executive Skills in Children and Adolescents: A Practical Guide to Assessment and Intervention (The Guilford Practical Intervention in Schools Series) [Paperback]
Fred McPherson (Author), Robert K. Sawyer (Author)

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Cognitive Strategy = EF Instruction

Raising a Thinking Child: Help Your Young Child to Resolve Everyday Conflicts and Get Along with Others [Paperback]
Barbara J. Shap (Author)

ISBN-10: 0130366621 | ISBN-13: 978-0130366621

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Price: **\$10.11** & eligible for **FREE Super Saver Shipping** on orders over \$25. [Details](#)
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I Can Problem Solve: An Interpersonal Cognitive Problem-Solving Program : Intermediate Elementary Grades [Paperback]
Barbara J. Shap (Author)

ISBN-10: 0130366621 | ISBN-13: 978-0130366621

List Price: \$44.90
Price: **\$34.11** & this item ships for **FREE with Super Saver Shipping**. [Details](#)
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Cognitive Strategy = EF Instruction

- A strategy is a procedure that the learner uses to perform academic tasks
- Using a strategy means the child thinks about 'how you do what you do'
- Successful learners use many strategies.
- Some of these strategies include visualization, verbalization, making associations, chunking, questioning, scanning, using mnemonics, sounding out words, and self-checking and monitoring.

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Cognitive Instructional Methods



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The First Step...

- Talk to the STUDENT !

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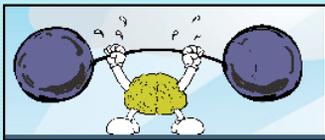
Mindset Matters

- Changing "How you do what you do"
- **Fixed mindset:**
 - Effort will not make a difference
 - You either get it or you don't.
- **Growth mindset:**
 - Dedication and hard work will pay off
 - A love of learning and a persistence is essential
 - Consistent effort makes a difference **EVEN** in the face of failure



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Dweck's web site: www.brainology.us



"The growth mindset...reveals that thinking skills can be developed, and expertise can be built by means of deliberate practice."

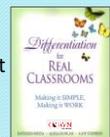
conclusions

Kryza et al (2011)

- Activities that reveal students' mindset

The following are possible activities you could use to have students feel their mindsets (*Developing Growth Mindsets in the Inspiring Classroom*, Kryza, Stephens, & Duncan, 2011):

- **Take a Quiz** (linguistic or logical): Give students a surprise quiz on what they've been learning in your class.
- **Try Toothpick Puzzles** (logical): Have students try to solve a toothpick puzzle. Many examples and solutions at various levels can be found at: <http://www.madras.fife.sch.uk/departments/maths/toothpickworld/toothpick13s.html>.
- **The Knots** (visual/tactile): Provide rope and written directions with no pictures and have students try tying knots.



Reflection: After each activity, ask students to respond to the following questions:

- So, how did you feel before you started this activity? What were you saying to yourself?
- What did you feel and say to yourself during the activity?
- How did you feel and speak to yourself after the activity?

Students then categorize their comments into growth or fixed mindset categories.

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Essentials of CAS2 Assessment (2016)

Use this informal measure to gauge a student's growth or fixed mindset

Measure of Mindset (May be duplicated for educational use only.)

Measure of Mindset (MOM-GF)
Jack A. Naglieri & Kathleen M. Kryza - Copyright © 2015

Name: _____
Date: _____

Instructions: These 10 questions ask about how you think and feel. The answers you give can help us know your thoughts about how you learn. Please read every question carefully and circle the number under the word that tells what you do.

	Never	Sometimes	Most times	Always
1. I don't give up easily.	0	1	2	3
2. When things get hard I say "I can do it!"	0	1	2	3
3. When I fail I try harder until I get it done.	0	1	2	3
4. I believe that I can learn from my mistakes.	0	1	2	3
5. I think I can do almost anything if I try hard enough.	0	1	2	3
6. When I don't understand something I give up.	0	1	2	3
7. I do not like to be challenged.	0	1	2	3
8. When work is hard I think, "I can't do it."	0	1	2	3
9. When things get hard I do something else.	0	1	2	3
10. When I fail I do something else that is more fun.	0	1	2	3

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Kryza Practical EF Instruction

Practical Strategies for Developing Executive Functioning Skills for ALL Learners in the Differentiated Classroom 29

Kathleen Kryza

It's the first week of school for Alicia, a middle school teacher in a large school district in Michigan. She's been prepping for the first days of school for weeks, getting her room ready and planning lessons. Last week she attended staff development sessions to learn about the new district and state initiatives and mandates that must be followed this year. Starting tomorrow, she will be immersed for the next 180 school days with a full day's schedule of three different prep—seven 50-minute classes with at least 12 minutes in each class. She can't imagine adding one more thing to her already overflow "To Do" list. But over the summer, Alicia read a book on teaching executive functioning skills to special needs learners. She really sees the value in teaching these important skills to her most at-risk students, but when can she possibly find time to do this? And how?

Alicia, like many teachers, understands the importance of developing executive functioning skills in her students, but given the full schedule of reprinted academic content she needs to teach, according to Judy Willis, a neurologist turned middle school teacher and international education consultant, "We can identify the practices that benefit all learners by looking at the skills...

Kryza et al (2011)

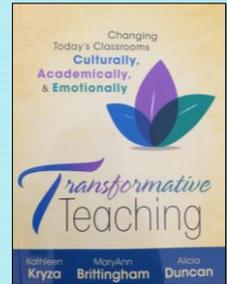
Intentional and Transparent

- YOU know WHY you are teaching what you are teaching (Intentional).
- STUDENTS know why they are learning what they are learning (Transparent).
- Talk the talk! Tell students:
 - What they are learning
 - Why it's important to learn
 - What strategies grow effective learners
 - Reflect on learning with your students
 - Notice and name how they learn and what strategies help them win the learning game.

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Why Intentional and Transparent?

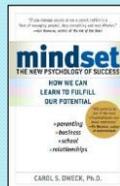
- The human brain responds to knowing **WHY**.
- Teach **WITH** your students, not AT them.
- Teach kids **HOW** to learn is as important as teaching them **WHAT** to learn.



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EF and Mindset

- The first step is to help students understand that they CAN DO BETTER in school (and in life) if they use their EF
- This gives hope
- This instills persistence
- Or else we have ...



conclusions 29

Winning Formula for Success (Kryza et al, 2015)

Mindsets (EF) plus **Skill Sets** equals **RESULTS!**



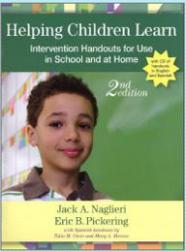
conclusions

Does teaching students to use EF influence school performance?

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Encourage Planning

- Helping Children Learn Intervention Handouts for Use in School and at Home, *Second Edition*
By Jack A. Naglieri, Ph.D., & Eric B. Pickering, Ph.D.,
- Spanish handouts by Tulio Otero, Ph.D., & Mary Moreno, Ph.D.



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Step 1 – Talk with Students

How to Be Smart: Planning

When we say people are smart, we usually mean that they know a lot of information. But being smart also means that someone has a lot of ability to learn new things. Being smart at learning new things includes knowing and using your *thinking abilities*. There are ways you can use your abilities *better* when you are learning.

What Does Being Smart Mean?

One ability that is very important is called *Planning*. The ability to *plan* helps you figure out *how to do things*. When you don't know how to solve a problem, using Planning ability will help you figure out how to do it. This ability also helps you control what you think and do. It helps you to stop before doing something you shouldn't do. Planning ability is what helps you wait until the time is right to act. It also helps you make good decisions about what to say and what to do.

Step 1 – Talk with Students

How Can You Be Smarter?

You can be smarter if you **PLAN** before doing things. Sometimes people say, "Look before you leap," "Plan your work and work your plan," or "Stop and think." These sayings are about using the ability to plan. When you stop and think about *how* to study, you are using your ability to plan.

You will be able to do more if you remember to use a plan. An easy way to remember to use a plan is to look at the picture "Think smart and use a plan!" (Figure 1). You should always use a plan for reading, vocabulary, spelling, writing, math problem solving, and science.

Do you have a favorite plan for learning spelling words? Do you use flashcards or go on the Internet to learn? Do you ask the teacher or another student for help? You can learn more by using a plan for studying that works best for you.

It is smart to have a plan for doing all schoolwork. When you read, you should have a plan. One plan is to look at the questions you have to answer about the story first. Then read the story to find the answers. Another plan is to make a picture of what you read so that you can see all the parts of the story. When you write you should also have a plan. Students who are good at writing plan and organize their thoughts first. Then they think about what they are doing as they write. Using a plan is a good way to be smarter about your work!

Think smart and use a plan!



Planning

Teaching Students About Planning

How Learning Depends on Planning Ability

The purpose of education is certainly to provide students with knowledge and skills, but so- teachers have found that children also need to learn how to learn. To achieve that goal, we must teach students to evaluate, apply solutions, self-monitor, and self-correct—in short, to plan their work and strategies to solve all types of problems. When we teach our students to become strategic, self-reliant, reflective, and flexible learners, we are teaching use of a method called Cognitive Strategy Instruction (CSI), and this is an effective practice.

When reading, and especially when obtaining meaning from text, the student must plan an approach to answering the information that is presented. This involves applying strategies to organize the information from the less important part of the text, concentrate on the details, self-monitor, and self-correct as needed. Students who are good at writing organize their goals before beginning and reflect and revise during and following production of the text. When doing math, students who are successful evaluate the problem, choose which method to use to solve it, evaluate the success of that method, change methods if necessary, and check the final answer carefully. This is also sometimes referred to as metacognition, problem-solving, strategic thinking, or self- regulated learning skills. When we use cognitive strategy instruction, we are teaching students to think about what they are doing so that they can be more successful.

Importantly, these descriptions of how to learn, and the cognitive strategy instruction approach in general, are descriptions of the behaviors associated with the cognitive processing ability called Planning in this book and the Planning Instruction Handout, © 1995, in order to help students be more successful. We must teach them to be more planful.

How to Teach Planning

The first step in teaching children to do more strategic, self-reliant, reflective, and flexible learning is to tell them what a plan is and give them an easy way to remember to use a plan. In Figure 1 (which also appears in the next section on the CSI), we provide a text and simple message: "Think smart and use a plan!" We should provide cognitive strategies in specific academic areas, such as dictating, reading comprehension, vocabulary, spelling, writing, math problem solving, science, and so forth, to tell us

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Planning

Planning Facilitation for Math Calculation

Math calculation is a complex activity that involves recalling basic math facts, following procedures, working carefully, and checking one's work. Math calculation requires a careful (i.e., planful) approach to follow all of the necessary steps. Children who are good at math calculation can move on to more difficult math concepts and problem solving with greater ease than those who are having problems in this area. For children who have trouble with math calculation, a technique that helps them approach the task planfully is likely to be useful. Planning facilitation is such a technique.

Planning facilitation helps students develop useful strategies to carefully complete math problems through discussion and shared discovery. It encourages students to think about how they solve problems, rather than just think about whether their answers are correct. This helps them develop careful ways of doing math.

How to Teach Planning Facilitation

Planning facilitation is provided in three 10-minute time periods: 1) 10 minutes of math, 2) 10 minutes of discussion, and 3) 10 more minutes of math. These steps can be described in more detail:

Step 1: The teacher should provide math worksheets for the students to complete in the first 10-minute session. This gives the children exposure to the problems and ways to solve them. The teacher gives each child a worksheet and says, "Here is a math worksheet for you to do. Please try to get as many of the problems correct as you can. You will have 10 minutes." Slight variations on this instruction are okay, but do not give any additional information.

conclusions 36

JOURNAL OF LEARNING DISABILITIES
VOLUME 33, NUMBER 6, NOVEMBER/DECEMBER 2000, PAGES 591-597

Effectiveness of a Cognitive Strategy Intervention in Improving Arithmetic Computation Based on the PASS Theory

Jack A. Naglieri and Deanne Johnson

Abstract

The purpose of this study was to determine if an instruction designed to facilitate planning, given by teachers to their class as a group, would have differential effects depending on the specific Planning, Attention, Simultaneous, Successive (PASS) cognitive characteristics of each child. A cognitive strategy instruction that encouraged planning was provided to the group of 19 students with learning disabilities and mild mental impairments. All students completed math worksheets during 7 baseline and 14 intervention sessions. During the intervention phase, students engaged in self-reflection and verbalization of strategies about how the arithmetic computation worksheets should be completed. The sample was sorted into one experimental and four contrast groups after the experiment was completed. There were four groups with a cognitive weakness in each PASS scale from the Cognitive Assessment System and one group with no cognitive weakness. The results showed that children with a cognitive weakness in Planning improved considerably (large effect size of 1.4); in contrast to those with a cognitive weakness in Attention (small effect size of 0.3), Simultaneous weakness (a slight deterioration and effect size of -0.2), Successive weakness (medium effect size of 0.4), and no cognitive weakness (small effect size of .2). These data showed that children with a Planning weakness benefited from the instruction designed to help them be more planned. Those children who received the planning-based instruction who were not low implanning did not show the same level of improvement.

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Children with PASS Profiles

- 21 children with LD and mild mental impairments
- Teachers followed Planning Facilitation method described by Naglieri and Gottling (1997, 1997)
- Students were given instruction that facilitated the use of Planning

conclusions 38

Planning Facilitation in Math - Naglieri & Gottling (1997)

- ▶ Students were encouraged to
 - determine how they did the pages
 - verbalize and discuss their methods
 - be self-reflective
- ▶ Teachers asked questions to facilitate
 - How did you do the problems & why?
 - What will you do next time?
 - What did you notice on this page?

conclusions 39

Planning Facilitation in Math - Naglieri & Gottling (1997)

- ▶ Students said:
 - When I get distracted I move my seat
 - I have to remember to borrow
 - I'll do the easy ones first
 - I do them row by row
 - Keep the columns straight
 - Be sure to do them right not just get it done

conclusions 40

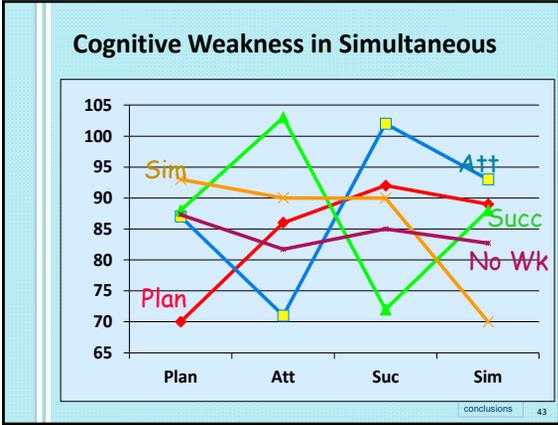
Illustration of a Math Worksheet Used in this Study.

Name:	Page 1	2	12	5	1	2
Date:		2	12	14	10	3
		+	+	+	+	+
988	98,923	7,344	5	6	3	3
- 335	287	- 3,740	5	13	3	5
15	50	154				
X 1	X 2	X 68	5	18	24	25
			11	1	3	3
864	99,979	9,424	11	5	6	3
+ 192	+ 241	+ 6,430				
83,052	71,085	81,747	9	9	7	7
- 44,247	24,408	- 12,688	9	13	11	11
			3	10	4	1
1304	934	1918	5	14	9	6
X 39	X 533	X 767				

Children with PASS Profiles

- Naglieri & Johnson (1998)
 - Seven 10-minute Baseline sessions
 - Fourteen 10-minute Intervention sessions
 - Children completed math computation worksheets that came from the curriculum
 - Children with a cognitive weakness in each of the PASS areas were identified
 - Cognitive Weakness = significant PASS ipsative score *and* the weakness must be a score < 90.

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Children with PASS Profiles

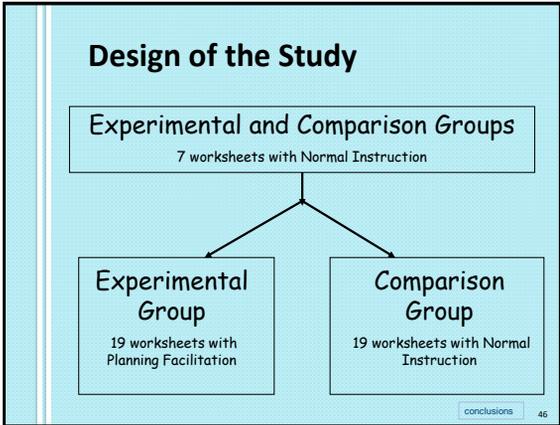
	# Correct Baseline	Inter-vention	% Change	Effect Size
Plan				
Sim				
Att				
Suc				
NoCW	26	29	11	0.2

Note: Total number correct for all 7 sessions. 7 baseline, 14 intervention sessions (intervention number correct was weighted by .5). The % change = (Int - Base) / Base. Effect sizes are averages across subjects using (mean Int - mean Base) / SD baseline.

A Cognitive Strategy Instruction to Improve Math Calculation for Children With ADHD and LD: A Randomized Controlled Study

Jackie S. Iseman¹ and Jack A. Naglieri¹

Abstract
The authors examined the effectiveness of cognitive strategy instruction (Successful) given by special education teachers to students with ADHD. The experimental group were exposed to a brief cognitive strategy instruction, development and application of effective planning for mathematical computation, standard math instruction. Standardized tests of cognitive processes as students completed math worksheets throughout the experimental phase. Johnson Tests of Achievement, Third Edition, Math Fluency and Wechsler Numerical Operations) were administered pre- and postintervention, a follow-up. Large pre-post effect sizes were found for students in the exp math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Num. At 1 year follow-up, the experimental group continued to outperform the students with ADHD evidenced greater improvement in math worksheets (which measured the skill of generalizing learned strategies to other situations when provided the PASS-based cognitive strategy instruction.



Instructional Sessions

- Math lessons were organized into "instructional sessions" delivered over 13 consecutive days
- Each instructional session was 30-40 minutes
- Each instructional session was comprised of three segments as shown below

10 minutes	10-20 minutes	10 minutes
10 minute math worksheet	Planning Facilitation or Normal Instruction	10 minute math worksheet

Normal Instruction and Planning Facilitation Sessions

- Normal Instruction
 - 10 minute math worksheet
 - 10 - 20 of math instruction
 - 10 minute math worksheet
- Planning Facilitation
 - 10 minute math worksheet
 - 10 minutes of planning facilitation
 - 10 minute math worksheet

Planning Strategy Instruction

- ▶ Teachers facilitated discussions to help students become more self-reflective about use of strategies
- ▶ Teachers asked questions like:
 - What was your goal?
 - Where did you start the worksheet?
 - What strategies did you use?
 - How did the strategy help you reach your goal?
 - What will you do again next time?
 - What other strategies will you use next time?

Student Plans

- ▶ “My goal was to do all of the easy problems on every page first, then do the others.”
- ▶ “I do the problems I know, then I check my work.”
- ▶ “I do them (the algebra) by figuring out what I can put in for X to make the problem work.”
- ▶ “I did all the problems in the brain-dead zone first.”
- ▶ “I try not to fall asleep.”



Student Strategies

Iseman and Nagleri 189

Table 3. Students' Comments During Planning Facilitation Sessions

Goals:

- “My goal was to do all of the easy problems on every page first, then do the others.”
- “To get as many correct as I can.”
- “To get as many right as quickly as possible.”
- “To take time and make sure I get them correct.”

Starting place

- “I started on the first one.”
- “I skipped around.”
- “I do the easy ones first.”
- “I look at the type of problem and the number of steps and decide which problems to do first.”

Overall plan

- “I did all the easy problems on a page and went onto the next one.”
- “I do all the addition first, then the easy ones, and then I move onto the harder ones.”
- “I do the problems I know, then I check my work.”

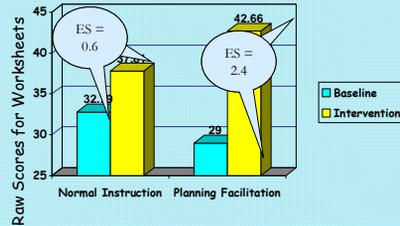
Specific strategies

- “I simplify fractions first.”
- “Skip the longer multiplication questions.”
- “The problems that have lots of steps take more time, so I skip them.”
- “I do them [the algebra] by figuring out what I can put in for X to make the problem work.”
- “I draw lines so I don't get my columns confused [on the multiplication].”
- “I stopped drawing lines because it slowed me down.”
- “If a problem is taking a long time I skip it and come back to it if I have time.”
- “I did the ones that take the least time.”
- “Remember that anything times 0 is 0.”

Noticing patterns in the worksheets

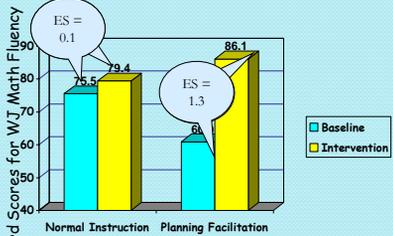
- “I did all the problems in the brain-dead zone first.”
- “I started in the middle of the page, the problems on top take longer.”
- “Next time I'll skip the hard multiplication at the top of the first page.”

Worksheet Means and Effect Sizes for the Students with ADHD



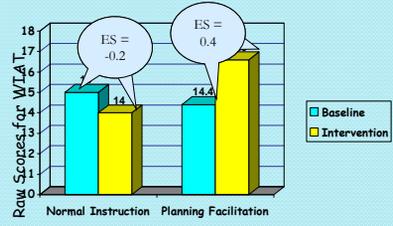
Reminder
 < .2 = no effect
 .2 - .5 = small
 .6 - .8 = medium
 > .8 = large

WJ Math Fluency Means and Effect Sizes for the Students with ADHD



Reminder
 < .2 = no effect
 .2 - .5 = small
 .6 - .8 = medium
 > .8 = large

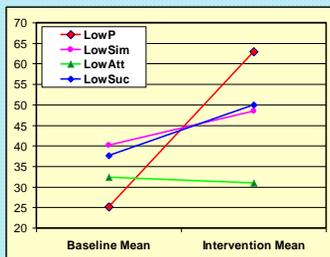
WIAT Numerical Operation Means and Effect Sizes for Students with ADHD



Reminder
 < .2 = no effect
 .2 - .5 = small
 .6 - .8 = medium
 > .8 = large

Iseman (2005)

- Baseline Intervention means by PASS profile
- Different response to the same intervention



conclusions 55

One Year Follow-up

At 1-year follow-up, 27 of the students were retested on the WJ-III ACH Math Fluency subtest as part of the school's typical yearly evaluation of students. This group included 14 students from the comparison group and 13 students from the experimental group. The results indicated that the improvement of students in the experimental group ($M = 16.08$, $SD = 19$, $d = 0.85$) was significantly greater than the improvement of students in the comparison group ($M = 3.21$, $SD = 18.21$, $d = 0.09$).

conclusions 56

Instructional Implications

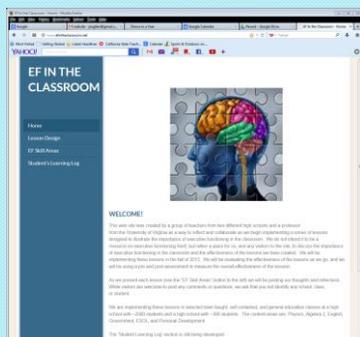
- Planning Strategy Instruction is easily implemented in the classroom and can be used to improve Executive Functioning
- The method yields substantial results within a minimal of time (10 half-hour sessions over 10 days)
- Planning Strategy Instruction can be applied in math as well as other content areas (e.g., reading comprehension)

conclusions 57

EF Lessons for High School

conclusions 58

www.efintheclassroom.net



conclusions 59

EF Lesson Plan

- **Presentation of the Theme** - Students are given a task to do or video to what that provides a stimulus about the theme related to a specific executive functioning skill.
 - This activity and the resulting discussion will engage them in the learning process
- **Discussion** is facilitated by the teacher - This means getting the students to think about the message
 - Teacher encourages a discussion about the theme (what it means, is it important, how might this help you do better, etc).
 - The teacher could present or ask the students to provide other examples related to the theme
- **Reflection Period** -
 - The teacher presents a summary of what was said and what was learned.
 - The students might make an entry in their EF DIARY about what they learned
- After this session, the students should be reminded about the theme whenever appropriate

conclusions 60

Mountain View Alternative HS



conclusions 61

Comments about Efintheclassroom

- Student #1: My teachers taught me things not only about the subject they teach but something I can hold on to when I leave this place. For example, thinking about my thinking, having a growth mindset, working my memory and so on. They have taught me how to avoid distraction and complete a task.

conclusions 62

Comments about Efintheclassroom

- Student #2: Mountain View High School prepared me on my post-secondary success by helping me improve my executive functions, which are planning, time management, and goal directed persistence. I learned that to complete a task I must create a reasonable plan and follow it. I used to overload my plans and I could not complete them on time. My plans did not always work and I had to learn to be flexible and reschedule them. One plan I made was to stay during lunch or after school when necessary, and to take my time to do the important things. Together all these steps helped me move toward my goals and achieve them.

conclusions 63

Stuck on the Escalator: They GET It!

- “A student in 4th period was working in my Chemistry class spontaneously said, “Man, I am stuck on the escalator” even though that phrase is not used in Chemistry class.
- I took this as evidence that the (cuing) skills being learned in one class are transferring to another. It is encouraging.”

conclusions

EF Lesson Plan Logistics

1. At the start of the week, teachers *facilitate* the discussion beginning with some kind of an illustration of a *theme*.
2. The discussion should emphasize the theme which the students are reminded about from that point on.
3. The theme can be entered into a notebook and/or placed someone visible in the classroom
4. At the end of the week there is another discussion about the *theme* and how it influenced them

conclusions 65

Themes & structure of the lessons

- Attention
- Flexibility
- Inhibition
- Initiation
- Self-Monitoring
- Working Memory
- Organization
- Planning
- Emotional Regulation



conclusions 66

Planning Lesson

conclusions 67

STEP 3 – Share your ideas

Planning Lesson

Phrase of the week: What is your plan?

<http://www.youtube.com/watch?v=bQLCZOG202k>

1. What had to happen so that the people could dance together in this video?
2. What are the parts of a good plan?
3. How do you know if a plan is any good?
4. What should you do if a plan isn't working?
5. How do we use planning in this class?

Go to student learning log and create a plan for the week.

conclusions 68

Planning Lesson

- STEP 1 – View the video
- STEP 2 – Discuss the video with the person sitting next to you.
- STEP 3 – Share your ideas with everyone

conclusions 69

Planning Lesson Student responses

- Q: What would you have to plan out?
 - They had to learn the dance steps (knowledge)
 - Someone had to start dancing (initiation)
 - Permission from train station (planning)
- Q: What are the parts of a good plan?
 - Think of possible problems (strategy generation)
 - Organize the dance (organization)
 - Practice the dance steps (initiation)
 - Have a good idea of what to do (knowledge)

conclusions 70

Planning Lesson Student responses

- Q3: How do you know if a plan is any good?
 - Put the plan in action and see if it works (self-monitoring)
 - Give it a try (perhaps learn by failing)
- 1.Q4: What should you do if a plan isn't working?
 1. Fix it. (self-correction)
 2. Go home ! (a bad plan)

conclusions 71

Planning Lesson Student responses

- Q5: How do you use planning in this class?
1. We don't plan in this class
 2. Mrs. XXX does all the planning in this class so you don't have to think about planning

How might students react to being told that now they have to think and planning?

Like the Seinfeld video

conclusions 72

Working Memory Lesson

conclusions 73

What IS Working Memory

- Digit Span?
- Any test that requires memory?
- How is memory defined?
- What does not require memory?
- What are the exemplary research tests that have been used (see by Baddeley & Hitch, 1974; Engle & Conway, 1998)
 - Phonological loop
 - Visual-spatial scratch pad

conclusions 74

What is Working Memory

- Georgiou, Das, and Hayward (2008) described **working memory** as the capacity of the individual to store information for a short period of time and manipulate it using a phonological loop and visual-spatial sketchpad (Baddeley & Hitch, 1974)
- The **visual-spatial sketchpad** is described as a mental image of visual and spatial features (Engle & Conway, 1998)
- The **phonological loop** refers to retention of information from speech-based systems that are particularly important when order of information is required (Engle & Conway, 1998)

conclusions

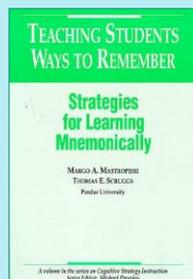
Working Memory Game

- You will see a series of words presented at 2 per second. The words are from two different categories. For example, Man - Hammer - Boat - Woman, would be organized into Man and Woman (people), Hammer and Saw (tools)
- When you see the STOP sign, that is the time for you will write the words down in two columns.

conclusions

EF Strategy to Improve Memory

- Mastropieri & Scruggs (1991)
- Mnemonics are strategies:
 - for learning
 - for improving memory
- Topics include:
 - vocabulary, science, reading, spelling, math



conclusions 77

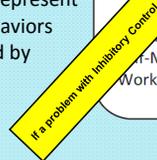
Inhibitory Control Lesson

conclusions 78

One Factor and 9 Scales?

- EF is a unidimensional concept
- Use the Full Scale to answer the question “Is the child poor in EF or not?”
- 9 scales identify the specific groups of items that represent different types of behaviors that can be addressed by Intervention

CEFI Scales
 Attention
 Emotion Regulation
 Flexibility
 Inhibitory Control
 Working Memory
 Planning
 Self-Monitoring



If a problem with Inhibitory Control

conclusions 79

Efintheclassroom.net

Response Inhibition

Question of the week: Can you resist the urge to respond?

[Marshmallow Experiment](#)

1. Which of the kids reminds you of you and why?
2. When do you need to think before you act?
3. When is a small immediate reward better than a big long term reward.
4. When do you not need to think before you act?

Wrap-Up: This week we are going to resist the urge to act before we should.
 Have the students talk about when they chose what gives a long term gain rather than the short term reward.

conclusions 80

Q: When do you need to think before acting?

- “All the time”
- “Like when your friend asks you to do something bad, you have to think on it”
- “We often act on impulse – I do that all the time”
- “There are certain things you just do without thinking – like when you hear a shot you run in swivels”

conclusions 81

Q: When is it better to wait?

- “But it’s worth it to wait, wait for more marshmallows - For a whole bag I’d wait”
- “I’d wait longer if it was for money!”
- “I know that when it comes to money, I should save for tomorrow, but if I want something, I want it now.”
- “Some times you don’t want to overthink”
- “My phone is my marshmallow”

conclusions 82

USING EF TO AID LOW SIMULTANEOUS OR SUCCESSIVE WEAKNESS

conclusions 83

Use EF to manage low Simultaneous

- How do you help a child with low simultaneous ability?
- Teach students to USE EF – that is use strategies
- What kinds of strategies could you use for tasks that require seeing the whole?

conclusions 84

Use EF

Graphic Organizers for Connecting and Remembering Information

Remembering and relating information is a common part of learning and daily life. Students are often expected to learn large amounts of new and unfamiliar information. Learning texts requires the student to see how information is connected or related. Students often remember this information better if they see it graphically and understand how it relates to knowledge they already have. Graphic organizers are designed to help students (and teachers) present and organize information so it is easier to understand and remember.

Graphic Organizers

New information is better remembered if it is connected to information the students already know. Graphic organizers are visual representations of information that shows the links of new information to other new and existing information. This makes the new information easier to understand and learn. Furthermore, the visual nature of graphic organizers and the links they make help students understand the connections between information parts. For example, a graphic organizer might be used to help young children about different animals. A child learning about different kinds of animals might already know what a fish is. This knowledge can be used to graphically organize whales, sharks, dolphins. They all live underwater, but sharks have gills and are fish. Whales and dolphins have lungs and breathe air, so they are not fish. Figure 1 represents one way to map this graphic.

How to Teach Graphic Organizers

Graphic organizers are fairly simple to create. They need not be reserved for factual information. They can be used for activities such as identifying creative concepts, organizing writing, and developing language skills. The following four steps can be used to create a graphic organizer.

1. Select information that you need to present to the child which may be from a story, a chapter, or any concept.
2. Determine the key components that are necessary for the child to learn.

Figure 1. One kind of graphic organizer.

Figure 2. A Venn diagram used as a graphic organizer.

conclusions 85

Venn Diagram

Figure 2. A Venn diagram used as a graphic organizer.

3. Create the graphic representation of the information. The illustration should include the key concepts, concepts the child already knows, and the linkages between the concepts.
4. Present the organizer to the child and discuss it to be sure he or she understands the information and sees the connections.

conclusions 86

Ben's Problem with Successive Processing

Ben was an energetic but frustrated third-grade student. His teachers, Ben said he did not like school at all, particularly his schoolwork. Ben was good at turning in all of his work on time, and he worked hard, but he earned poor grades. He appeared to be getting more and more frustrated at school.

In general, Ben struggled to perform well because he had a lot of trouble following directions that were not written down, his writing often did not make sense, and he did not appear to comprehend what he read. Ben's teachers noticed that when directions for assignments and projects were given orally in class, he often only finished part of the task. Ben's teacher described an assignment in which students had to collect insects, label them, organize them into a collection, and then give a brief presentation about each insect. Unlike any other student, Ben chose to make the labels for the insects first and then go look for the insects. He found only a few of the insects he had made labels for, and when he put them in the collection, they were not in the order that had been specified. He also had trouble with the spelling of the scientific names of the insects and made many errors in the sequence of letters in the words.

conclusions 87

Use EF to manage low Successive

- How do you help a child with low Successive ability?
- Teach students to USE EF – that is use strategies
- What kinds of strategies could you use for tasks that require working with information that is in a specific sequence?

conclusions 88

Ben's Problem with Successive

- Teach him to recognize sequences

How to Teach Successive Processing Ability

The first step in teaching children about their own abilities is to explain what Successive processing ability is. In Figure 1 (which is included in the PASS poster on the CD), we provide a fast and simple message: "Think smart and follow the sequence!" We should begin by helping children realize that they have many different types of abilities and that Successive processing is one of them.

presented in a specific sequence so that it see the sequence of events here?" or "Did you see how all of this is organized into a sequence that must be followed?" Information is sequenced in different content areas, such as reading, spelling, and arithmetic, as well as in sports, playing an instrument, driving a car, and so forth. Information is critical for success.

ing appropriate times during the day, remind students to closely attend to the sequence of information—when reading, presenting information in writing, examining the sequence of letters when spelling, solving math equations, and so forth. We need to teach children to approach all of this with an understanding of how the information is sequenced. Throughout the day, the teacher should do the following:

conclusions 89

Ben's Problem with Successive

- Teach him to be engaged in the solution

1. Teach children that most information is presented in a specific sequence so that it makes sense.
2. Encourage children by asking, "Can you see the sequence of events here?" or "Did you see how all of this is organized into a sequence that must be followed?"
3. Remind the students to think of how information is sequenced in different content areas, such as reading, spelling, and arithmetic, as well as in sports, playing an instrument, driving a car, and so forth.
4. Teach children that the sequence of information is critical for success.
5. Remind students that seeing the sequence requires careful examination of the serial relationships among the parts.

conclusions 90

EF strategies to overcome Successive weakness

Chunking for Reading/Decoding

Segmenting Words for Reading/Decoding and Spelling

Read:
stand
quenc
more
easily
units!

How Decoding a written word requires the person to make sense out of printed letters and words to translate letter sequences into sounds. This demands understanding the sounds that letters represent and how letters work together to make sounds. Sometimes words can be segmented into parts for easier and faster reading. The word *into* is a good example because it contains words that a child may already know: *in* and *to*. Segmenting words can be a helpful strategy reading as well as spelling.

Plan

Look:
Find:
Sound:
Sound:
Sound:

How to Teach Segmenting Words

Segmenting words is an effective strategy to help students read and spell. By dividing the words into groups, students also learn about how words are constructed and how the parts are related.

Conclusions

- The concept of EF is evolving
- Assess EF using multiple indicators – Ability, Behavior, Social-emotional, and Academics
- Use well normed measure of EF that have demonstrated reliability & validity
- There is good evidence that children can be encouraged to use EF and improve achievement and behavior

conclusions 92

Conclusions

- The teacher's role is to give the student knowledge of facts **and** to encourage the use of Executive Function
- When we give students the responsibility to figure out how to do things we teach them to **THINK SMART! and use EF**
- **This is the gift of smarter thinking**
- **This is a gift of optimism**
- **This is a gift for life success**
- **EF is about LIFE not just school**

conclusions 93

Thank you for attending.

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