

Hill, Skill, Will:
Promoting Executive Skills Development

Dr Thomas Sim



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HELPING DYSLEXIC PEOPLE ACHIEVE

Who am I?



- Dr Thomas Sim
- PhD (Psychology)
- 18 years of experience as a consultant, trainer, researcher, and lecturer in the areas of Psychology and Special Education with various organisations:
 - Nanyang, Ngee Ann, and Temasek Polytechnics, NUS, NIE (NTU), SIT, and UniSIM, various hospitals.
 - Currently Executive Director of the DAS Academy (Specialist Training Academy for Psychology and Special Education).



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Learning Outcomes:

- Understand executive functioning skills
- Understand importance of executive functioning skills
- “Hill, skill, will” of executive functioning skills



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Executive Functioning (EF) Skills

- Executive Functioning skills are a set of mental processes that all have to do with managing oneself and one's resources in order to achieve a goal.
- Help us decide what activities or tasks we will pay attention to and which we will choose to do.
- Allow us to organise our behaviour over time, and override immediate demands in favour of longer terms goals.



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EF and Life Outcomes

- **School achievement:** EF is associated with academic achievement throughout school years (e.g. Bull & Scerif, 2001)
- **Positive behaviours:** Leadership, teamwork, adaptability, weighing pluses and minuses of situation before acting, awareness of own emotions as well as others
- **Good heath:** Make positive choices about nutrition and exercise, resist smoking, drugs, excessive drinking, unprotected sex, and generally more conscious of safety
- **Successful career:** Higher EF associated with higher job satisfaction and self efficacy in dyslexic adults (Leather, Hogh, Seiss & Everatt, 2011). Helps dyslexics overcome difficulties and experience success (e.g. Gerber, 2002)



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EF and Life Outcomes

- **Poor EF** is associated with problems such as ADHD, conduct disorder, peer rejection, low academic performance, student dropout, and crime (McClelland et al., 2000).



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A Child with Strong EF Skills...

- Sally is in charge of her behaviour. When she encounters a difficult question, she selects strategies and researches for alternative solutions. Sally works on the problem according to constraints of time and energy. She monitors, controls and judges her working. She evaluates and decides if the problem is solved to a satisfactory degree or when the demands of other questions take a higher priority.

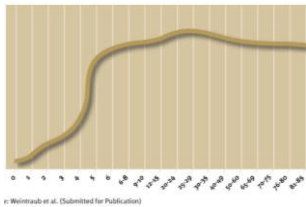


A Child with Weak EF Skills...

- John is a puzzle to me. He seems so bright and creative, and he always contributes wonderful ideas to our class discussions. However, he procrastinates when it comes to assignments, does not seem to study for tests, and he is usually late with projects. I don't know if he is just lazy. I wish he was more motivated and invested in his work.



Executive Function Skills Build Into the Early Adult Years



EF develops most rapidly in the preschool years!

© Weintraub et al. (Submitted for Publication)

www.developingchild.harvard.edu/resources/



Head Shoulders Knees Toes Test

- Self-regulation assessment (Ponitz, et. al., 2008)
- Self-regulation: Basis of thoughtful behaviour and underlies many aspects of school performance
 - Part 1
 - “Touch your head” – toes!
 - “Touch your toes” – head
 - Part 2:
 - “Touch your knees” – shoulders!
 - “Touch your shoulders” – knees!
 - Part 3:
 - Everything together!



Executive functioning Skills in a Nutshell

- Hill – what the person wants to accomplish
 - Skill – abilities and techniques to attain that goal
 - Will – the energy and will to persevere
- Moran & Gardner (2007)



Hill, Skill, and Will



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HILL

- Without a goal, students will:
 - Put homework/studying off till the last minute
 - Have difficulty setting aside fun activities in order to start homework
 - Difficulties with independent studying , homework, tests and long-term projects
 - Struggle to identify the most important information for studying
 - Struggle to initiate written tasks

HILL

- When students set their own goals, they show greater commitment and are more motivated to attain these goals (Zimmerman & Schunk, 2001)

HILL

- Long-term
 - Successful Goal Setting (SMART Goals)
- Short-term
 - Finish Homework
 - Complete Reading Task
 - Complete Writing Task
 - Complete Math Task

Successful Goal Setting

- SMART goals
 - Specific
 - Measurable
 - Achievable
 - Realistic
 - Time specific

Hill, **Skill**, and Will



SKILL

- Skill – Tools to Attain the Goal
- You need different skills for different tasks
 - Planning
 - Prioritising
 - Organising
 - Memory Strategies
 - Shifting mindsets flexibly
 - Self-checking



EF skills for Homework

- 1. Planning
- 2. Prioritising
- 3. Organisation



Planning

HOMEWORK TIME SHEET			
I'm done!	Assignment	Estimated Time	Actual Time
✓	Math Fractions	10 minutes	20 minutes
✓	Chinese Spelling	10 minutes	60 minutes
✓	English Open-ended Comprehension	15 minutes	45 minutes

Prioritising

- Prioritise how much time and effort to allocate to various goals:
- On Wednesday, Nicholas arrives home from school frustrated that he does not understand the concept of photosynthesis his Primary 4 class is studying. His science homework is 2 pages of the science workbook on photosynthesis due next week. He also has Math homework to complete and a chapter to read in his independent reading book due tomorrow. His teacher as told the class that the Math and reading can be completed pretty easily, in 45 minutes. He also has to make a birthday card for his friend whose birthday is on Friday.

Organisation

- Same time, same place everyday!
- Explicit systems and strategies are important for teaching organization of materials. Use colour-coding strategies and good filing system in school and at home.



Specific Example
EF skills for Reading Comprehension:

- 1. Planning to understand
- 2. Self-checking for understanding
- 3. Flexible mindsets
- 4. Self assessment



Planning to Understand - Predicting

- Beginning readers need to know that reading must make sense!
- Survey, predict and set a purpose:
 - Doing a picture walk and predict what they will learn (picture books)
 - Read questions before reading passage

Planning to Understand – Think Aloud

- Asking questions: Active and proficient readers generate questions and make predictions as they read (think aloud)

Self-Checking for Understanding

- Get student to complete a cloze after guided reading
 - Keep first and last line intact
 - 10 blanks
 - Passage should be same/similar to original passage read

Flexible Mindset

- Understand the different types of comprehension question and provide different answers:
 - Easy/Direct questions: answers can be found just there, without much tweaking
 - Inferential/Tricky questions: answers that must be explained in own words (not directly stated in the text), require you to make connections between ideas/ infer meaning by using clues

Flexible Mindset

- Evaluative/ “how do you feel” questions: require you to critically assess ideas in the text
- Vocabulary questions: ask for meaning of specific words, phrases or sentences. Sometimes you are given a word and you have to find its equivalent in the passage

Self-Assessment

- Did I exhibit intelligent behaviours? Promotes reflection.
- Before doing task
 - Knowledge: I have good/poor prior knowledge of the topic
 - Motivation: I want to complete this task so that _____
- After doing task
 - Control: I completed the task by using these strategies (Tick):
 - Thinking aloud
 - Understanding different demands of questions

EF skills for Writing (A General Strategy)

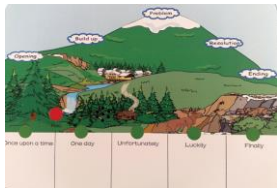
- Pick my idea
- Organise my notes
- Write and say more

From Graham, Harris & Olinghouse (2007)



Organise my notes

- Narrative Essay
 - Story mountain
- Persuasive Essay
 - TREE



Write and Say More

- STOPS (Meltzer, Pollica, & Barzillai, 1995)
 - Sentence structure
 - Tenses
 - Organisation
 - Punctuation
 - Spelling

EF skills for Math:

1. Memory Strategies
2. Organizing Strategies
3. Checking Strategies



Memory Strategies

- Strong link between math performance and executive function skills, especially working memory (e.g. Geary, 1990)
- Strategies
 - Order of operations in algebra: PEMDAS
 - Problem solving: KNOW

Verbal Memory Strategies – PEMDAS “Please Excuse My Dear Aunt Sally”

- Helps with order of operations in algebraic equations e.g. $7 + (6 \times 5^2 / 5 + 3)$
 - **P**arentheses
 - **E**xponents
 - **M**ultiplication
 - **D**ivision
 - **A**ddition
 - **S**ubtraction

Verbal Memory Strategies – KNOW

- Steps for solving Word Problem
 - **K**: Underline Key words
 - **N**: Underline numbers
 - **O**: Write operations (+, -, x, /)
 - **W**: Work it out!

Organizing Strategies

- Math Strategy Notebook
- **What?** A way to keep math facts, rules, and steps organised. A way to make studying for math tests easier.
- **When do I use it?** In class, homework time, study time.
- **How do I use it?**



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Triple Note Tote

Term	Definition	Example
Fraction	Part of a whole or a group	$\frac{2}{6}$ = I get 2 out of 6 pieces
Decimal	Another way to write a fraction	$\frac{2}{6}$ = 2 divide by 6 = 0.33 = 33/100
Percent	Part of a hundred	33/100 means 33%

Taken from Graham, Harris, & Olinghouse, N. (2007).



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Checking Strategies

- Students need to attend, self-monitor, self-reflect and self-regulate to do well in Math



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Checking Strategies (Guess-timation)

Question (for whole numbers)	Answer
A + B	>A and >B
A X B	>A and >B
A - B	<A
A ÷ B	<A
Even X Even	Even
Even X Odd	Even
Odd X Even	Even
Odd X Odd	Odd



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Hill, Skill, and Will



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Executive Control

“...Executive functioning involves the conscious, purposeful and thoughtful activation, orchestration, monitoring evaluation, and adaptation of strategic resources, knowledge, skills, and **motivational states** to achieve a desired goal...”

Graham, Harris, and Olinghouse (2007, pp. 217)



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Willpower and Success

- People with dyslexia often have to work longer and harder to achieve to the same level as their non dyslexic counterparts (McLoughlin, Leather, & Stringer, 2002).



Willpower and Success

- Evidence point to personal attributes such as:
 - self awareness, perseverance, pro-activity, and **goal setting** (Goldberg, Higgins, Raskind, & Herman, 2003)
 - enhanced level of **planning and metacognition** (Leather, Hogh, Seiss, & Everatt, 2011) and **internal control** (Gerber, 2002).



What is “WillPower”?

- The “Marshmallow” Experiment
 - 4 year-olds who had more willpower and resisted marshmallows VS 4 year-olds who gave in to temptation... What are the differences?
 - Original experiment by Mischel, Ebbe, & Antonette (1960s and 1970s)



Facts about Willpower

- Self-control can be built up, like a muscle (Baumeister, Galliot, DeWall, Oaten, 2006).
- Self-control is a limited resource. Exercising it has clear physiological effects, like lower glucose levels (Galliot, et. al, 2007)
- Recognise when your levels of self-control are low and make sure you find a way to avoid temptation during those times



Factors Associated with Willpower

- Self-esteem
- Daily Practice
- Praise, Rewards and Punishment
- Pre-commit to Precise Goals



Self-esteem

- Self-esteem: How does one feel about oneself?
- Unexplained difficulties can cause children to call into question their intellectual abilities and to lose motivation (McNaulty, 2003)



Daily Practice

- Adult supervision is a crucial aspect of self-control
- Parents can help children exercise **willpower** daily simply by reminding them to:
 - Practise musical instrument or sport
 - Sit up straight!
 - Speak grammatically
 - Avoid starting sentences with “I”
 - Mind table manners
 - Avoid use of profanity
 - Writing thank you notes etc..



Praise, Rewards and Punishment

- What would you say to a young child for a good piece of drawing?
 - Kids behave very differently depending on the kinds of praise they receive (Mueller & Dweck,1998)
- People were better able to make short-term sacrifices for long-term gains when they had a self-imposed reward in mind. (Trobe and Fishbach, 2000)



Pre-commit to Precise Steps

- Pre-commit yourself to difficult goals/ precise steps can lead to increased performance.



Habits

- Humans are creatures of habits
- Habits influence how we act – often without realisation
- Habits emerge because the brain is constantly looking for ways to save effort – making the brain more efficient
- Every habit, no matter its complexity, is malleable, when you decide to change it



The Habit of Success

- The brain can be reprogrammed. You just have to be very deliberate and determined about it.
- Genuine change requires work and self understanding of the cravings driving behaviour.
- Work with the child to change his or her bad habit.
- Changing habits requires social support and encouragement.



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