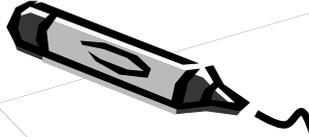




How to Help Children Develop the Underlying Cognitive Skills Needed for Success in School:  
How to help your child learn

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The Child with Galactosemia and Learning



### Learning issues

Even though there is a wide range of cognitive abilities among children with Galactosemia, Antshel, Epstein and Waisbren (2004) report that they may have:

- low average IQ
- less well developed executive functions
- slower processing speed
- difficulty with word retrieval

(Cognitive strengths and weaknesses in children and adolescents homozygous for galactosemia Q188R mutation: A descriptive study. Neuropsychology 2004, vol 18,4 p 658-664)




### What does it mean?

"Low average IQ"

- Average IQ is 100 with a range of 85-115
- Low average means around the 85 mark
- We will talk later about Intelligence (IQ) and Cognition.




### What does it mean?

"Less well developed executive functions"

- Executive functions are "responsible for a person's ability to engage in purposeful, self-regulated, goal-directed processing of perceptions, emotions, thoughts and actions"
- (McCloskey and Lennon, 2010, in The Educational Practice of Educational Therapy: a teaching model, Fickman and Adelizzi)
- Frontal lobe
- Does not develop completely until early twenties




### What does it mean?

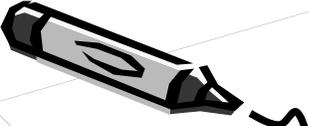
"Slower processing speed"

- Need more time to process verbal and visual information

"Difficulty with word retrieval"

Antshel and Epstein found that "cueing" improved word retrieval ability



How to help the children overcome some of the problems:  
**Interactive Learning**



### Overview

- Definitions
- What is **Interactive Learning**?
- How is **cognition** taught?
- Why do **cognitive foundation skills** fail to develop?
- Essential ingredients of Interactive Learning




### Definitions

**Interactive Learning**

An **interactional** process between a child and an **experienced** adult, who **actively guides** the learning experience, by helping the child **focus** and **understand**.




### Definitions

**Cognition**

- "The activities of thinking, understanding, learning, and remembering." (Merriam-Webster online dictionary)
- Cognition is different from "intelligence" and is not the same as the "IQ-score".
- Cognition is modifiable.
- "Intelligence" is more stable.




### Definitions

**Cognitive Foundation Skills**

- Cognitive Foundation skills are the **underlying thinking skills** a person needs in order to **LEARN**.
- These skills can be taught.

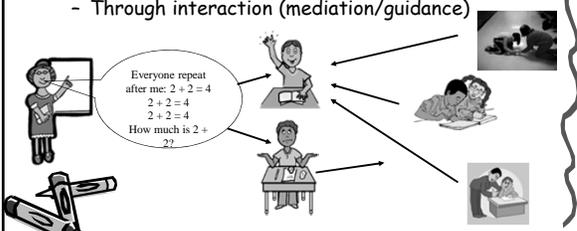
For Instance:

- The ability to **search** for information
- The ability to gather **all the available** information
- The ability to determine **what is relevant** to solving the problem




### Why Interactive Learning ?

- Children learn in two ways
  - Direct exposure
  - Through interaction (mediation/guidance)



Everyone repeat after me:  $2 + 2 = 4$   
 $2 + 2 = 4$   
 $2 + 2 = 4$   
 How much is  $2 + 2$ ?



Being able to learn through direct exposure is a **LEARNED BEHAVIOR**.

It is learned through development of underlying cognitive foundation skills

In other words: *Cognition is taught.*



For instance, children learn to focus on what is important or relevant by having things pointed out to them.




### Where does Interactive Learning Start?




- Parents are their children's first teachers.
- Through interactions with caregivers, children develop cognitive foundation skills
- If a child does not get sufficient interaction his/her cognitive functioning will be affected.



### How is Cognition Taught?

Scenario - walk in the park:

- Look at the dog
- Look at the dog's tail
- His tail is wagging
- That means he is happy
- When you are happy you smile
- Look, another dog. He is happy too, how can you tell?
- Remember, just like the big dog we saw before. Maybe we will see another one when we go to the store





### How is Cognition Taught?

Look at the dog	What is taught? - Attention and focusing - Clear perception
Look at the dog's tail	- Narrowing the focus to that which is important - Ability to pay attention to relevant information



### How is Cognition Taught?

His tail is wagging	What is taught? - Naming an event
That means he is happy	- Meaning - New Information
When you are happy you smile	- Apply new information to another situation - Make connections



## How is Cognition Taught?

Look, another dog. He is happy too, how can you tell?

Remember, just like the big dog we saw before. Maybe we will see another one when we go to the store.

What is taught?

- Reinforcing earlier learning
- Logical evidence
- Hypothetical (abstract) thinking
- Connect past, present and future to give a sense of continuity and understanding of cause and effect
- Comparing
- Making connections between events

## If it is that simple, why do those foundation skills sometimes fail to develop?

Typical Child

A-typical child

## Insufficient Interaction

- Interaction not offered
- Child is not open to benefit from interaction

## Insufficient Interaction

Not offered

- Environmental (e.g. orphanage)
- Socio-economic status
- Parents do not have enough time

Not open to

- Genetic factors (e.g. Down's)
- Brain damage (e.g. FASD)
- Emotional factors

## Increased Levels of Interactive Learning

## INTERACTIVE LEARNING

### HOW TO

## Interactive Learning: Essential Ingredients

- Choice
- Planning and Metacognitive Questioning
- Prompting
- Praise

## Choice

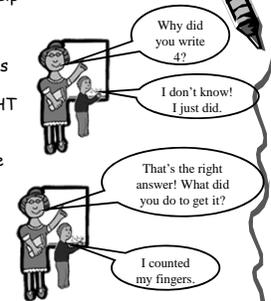
- Within the context of the learning situation, the child has a choice
- No "open-ended" choices
- No "Yes-No" choices

## Planning and Metacognitive Questioning

- Child and adult talk about what is going to happen, is happening and what has happened
- Before, during and after the task
- Questioning has to be non-judgmental
- Adult encourages child's intentions, reflections, problem solving, and creativity

## Metacognitive Questioning

- The purpose of questioning is to help the student become aware of his/her own thinking
- Therefore, ask PROCESS questions
- Ask for justification of both RIGHT and WRONG answers
- "Why-Question" the answer will be "I don't know!" - CHANGE THE QUESTION.
- Genuine "I don't know!" Help the student by prompting



Based on Feuerstein's Mediated Learning Experience theory

## Examples of metacognitive questions

- What do you need to do next?
- Tell me how you did that?
- What do you think would happen if .....?
- When have you done something like this before?
- How do you feel if ....?
- Great answer! How did you know that?

## More examples

- Stop and look carefully now!
- What do you think the problem is?
- Can you think of another way we could do this?
- Why is this one better than that one?
- Where have you done that before to solve a problem?
- Let's make a plan, so we don't miss anything.
- How is ..... different/the same from .....?

## Prompting in Interactive Learning

- Give the child the opportunity to show what he/she knows
- Use the "10-second-rule"
- Start prompting "farthest" away



"Far" prompting

Based on Feuerstein's Mediated Learning Experience theory

## Prompting in Interactive Learning

- If the student truly does not know, move in as close as is needed to make him/her respond successfully
- Move "closer" by little steps at a time
- Allow the child to give the answer, even with an extremely close prompt
- Praise



Experience success? Maybe learning is fun?

"Close" prompting

Based on Feuerstein's Mediated Learning Experience theory

## Praise

- Genuine
- Metacognition: Praise the behavior
- "Good Job" - this does not tell the child anything
- "Good Thinking!" - "Nice Straight Lines!" - "You compared these two and you found the answer!"



## Praise

No



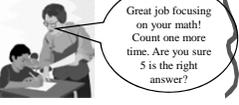
Yes



Yes



Yes





## Summary

When you help a child learn through Interactive Learning, you draw attention to his/her environment, and his/her own internal process of thinking about situations and behavior. This is done through the process of non-judgmental questioning, prompting and praising.



## Conclusion

- Never give up on a child and
- Never believe those that say nothing can be done!
- Even though it may take a great deal of effort, cognition can be improved!

