

What Parents Need to Know About How Their Children Learn

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Thinking and Learning in Concert

... an education consultancy promoting the harmonious integration of skillful thinking and learning



Agenda

- How recent research in education has led to a new understanding of **"How People Learn"**.
- How children can come to think about their own thinking and thereby improve it. **"Metacognition"**



Changes in Education Today Are driven By:

Globalization and the communications revolution

Industrial Age → Information Age

... this means different knowledge is required.

Recent research on the brain and how it functions

... leading to new views on "How People Learn"



How Did Humans Deal with Change?



...they muddled through.



What's different now?



... are we still muddling?



Understanding by Design: "Big Ideas" around a set of questions

Here is a Big Question to Start Us Off

What do you want your children to be able to do five years after they leave this school?

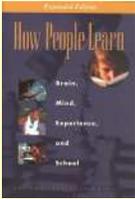


"Education is what you have left when you have forgotten ~~everything~~ you learned in school." **all the facts**

- Albert Einstein, 1936



"How People Learn"



A Study Commissioned by the US National Academies of Science and Engineering

Describes a synthesis of recent research by

- cognitive psychologists
- developmental researchers
- social psychologists
- cognitive psychologists
- anthropologists
- neuroscientists
- and educators

and leads to three significant findings.



Findings

- 1) Students come to the classroom with preconceptions about how the world works,
- 2) Students must understand facts and ideas in a conceptual framework,
- 3) metacognition helps students learn to take control of their own learning.

"How People Learn", Bransford, Brown et al, National Academy Press, Washington DC, 2002



Student's Preconceptions

- ... result from children's initial effort to figure out how the world works,
- ... can be deep seated and difficult to change,
- ... are able to "explain" the world at least partially,
- ... they may interfere with learning.

"Misconceptions Reconciled: A Constructivist Analysis of Knowledge in Transition", John P. Smith III, Andrea A. di Sessa, Jeremy Roschelle



Your child's preconceptions

Can you think of some idea about how the world works that your child has now or has had in the past that you know is wrong?

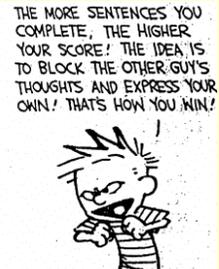
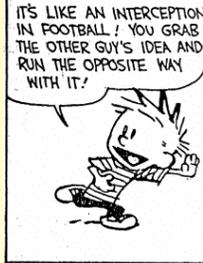
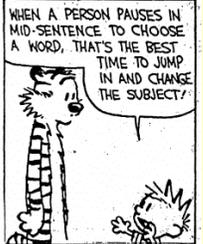
Where did that idea come from?

You can probe your children's preconceptions by being an effective listener and by using productive questioning.

Here is a good questioning strategy:

- Pause
- Paraphrase
- Probe

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Conceptual Framework

Experts acquire new information and organize it differently from novices.

Experts (teachers, parents, ...) may transfer information but not the context or organization of information ...

That must take place in the student's own mind.

How much 'stuff' can you remember?

- We can only remember 7 plus or minus 2 separate bits of information.
- To remember more and make it useful we have to chunk it and organize it
- We have to help children put new knowledge into the network of everything else they know so they can find connections and links.

By doing this we move from remembering to understanding

We want our children to grow in expertise - to become experts

To become experts:

- students should think about how they learn and how they organize information
- That's what they are doing when they are studying effectively
- Effective study is not just a matter of building rote memory



Metacognition

- Thinking about our thinking
- Understanding how we learn so we can get better at it
- Building up structures and organizing our new knowledge

An Important Reminder

The ability to think skillfully and reflect on our thinking is not an innate human characteristic.

These skills need to be explicitly taught to children.

Research has shown that around 30% of the adult population does not engage in metacognition.

Chiabetta, E.L.A., Science Education, 60, 253-261 (1976).
Whimby, A., Educational Leadership, 37 (7) (1980).



"Understanding by Design"

A program developed by Jay McTighe and Grant Wiggins and being used at Riverside Elementary School

Facilitates students' active construction of meaning

You can't build successfully without considering the foundation

Activates prior knowledge and **uncovers preconceptions**

Finding 1 of HPL

Teaches basic knowledge and skills in the context of big ideas and explores essential questions

Helps students see how new knowledge fits into the network of **bigger concepts and structures**.

Finding 2 of HPL

Promotes opportunities for students to unpack their thinking

Uses questioning, probing, and feedback to stimulate student reflection and rethinking - builds metacognition

Finding 3 of HPL

The focus is on the development of skillful thinkers who are able to use content knowledge - VA SOLs

When you think about your own thinking you are thinking about...

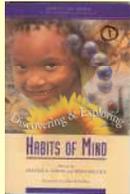


Content
A Thinking Skill
Behavior

Sometimes old habits stop being appropriate and we need to adjust



The Behaviors are provided by "Habits of Mind"



- Arthur Costa and Bena Kallick have developed 16 Habits of Mind by studying the behaviors of successful people
- These are dispositions to behaving intelligently when faced with a problem where the solution is not immediately known

The Habits of Mind provide us with *the dispositions* needed for skillful thinking and *a language* with which to develop the ability to think and talk about our thinking - metacognition.

Habits of Mind

- Personal Traits**
 - Persisting
 - Managing impulsivity
 - Striving for accuracy
 - Finding humor
- Acquiring Information**
 - Gathering data through all senses
 - Listening with understanding and empathy
 - Questioning and posing problems
 - Thinking interdependently
- Thinking Tools**
 - Thinking flexibly
 - Thinking and communicating with clarity and precision
 - Applying past knowledge to new situations
 - Remaining open to continuous learning
- Personal Responses to Thought**
 - Creating, imagining, innovating
 - Responding with wonderment and awe
 - Thinking about thinking (metacognition)
 - Taking responsible risks



In conclusion, to successfully guide your children through the educational system you should:

- 1) be aware of your children's preconceptions and help them evaluate their prior knowledge,
- 2) Help your children make connections between new knowledge and old knowledge and with the 'real world'
- 3) help your children become aware of their thinking so that they can monitor the progress of their learning and thinking.

How can parents help?

Stay aware

- Know what it is that your child is learning at school.
- It is your task to be involved with your child's learning.



List one important thing your child is learning about **this week** in:

- Science
- English
- Mathematics
- Social studies
- Art
- Music
- Physical education

Finding 1: Preconceptions

Don't tell. Ask questions to find out what your child **already knows** or thinks he/she knows. (Remember to pause, paraphrase, probe)

Use drawings - draw me a picture that shows me **everything** you **already know** about spring.

Limit the range - tell me three things you **already know** about storms

Finding 2: Creating a conceptual framework

Help your child to organize what he/she has learned:

- Use thinking maps
- Draw pictures
- Write a summary - write/tell me the four most interesting things you learned
- Tell grandma

Look for real world applications that place new knowledge and skills into a real world framework

"You know about multiplication. We have Grandma and Grandad eating dinner with us tonight. I want everyone to have two potatoes each, so get me the right number out of the cupboard."

"Let's go into the garden and look for signs of spring together. Where should we look? What might we find?" - ask these questions as you put on your coat and shoes.

"Let's go to the library and see if we can find any books about native Americans. What most interests you about them already?"

"We need to go shopping. You write the list for me. Do your best with the spelling. We can fix it later if we need to."

When you get home ask your child to go through the list looking for words that might need to be checked. Then refer to the actual item brought for the correct spelling.

This is a powerful way of helping with spelling because it places the skill into the framework of the real world.

It's also a good opportunity to talk about the 'weird' spellings.

Finding 3: Metacognition thinking about your thinking

Don't focus on what your child has learned.

Focus on how it was learned.

Ask questions like:

How did you work that out?

How did you know that?

What can you already do that will help with this?

Remember

When you ask your child questions that require thought:

Pause
Paraphrase
Probe



Please contact us



Thinking & Learning In
Concert

... promoting the harmonious integration
of skillful thinking and learning

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