

Learning how to learn

Modes

Focused

- Left Brain
 - Direct approach to solve familiar problems
 - Rational
 - Sequential
 - Analytical
 - bottom-up

Diffuse

- Right Brain
 - Random connections in relaxed fashion
 - Mental leaps
 - Big-picture kind of thinking
- Methods of activation
 - Physical exercise
 - Walking
 - Relaxed dancing
 - Taking a bath or shower
 - Sleeping
 - Meditation
 - Yoga
 - Dali's' or Edison's trick
 - Biofeedback
 - Sensory deprivation
- top-down

Context

Where bottom-up chunking and top-down big picture process meet

Sleep

Sub-conscious problem-solving

- Dreaming about something increases chances of understanding
- Reviewing material before sleeping increases chances of dreaming about it
- Writing next day's task list enlists *zombies* to help You
- Lucid dreaming

Brain cells shrink to allow toxins to be washed away

Brain forms new synapses

Problems of sleep deprivation

- Headaches
- Depression
- Heart disease
- Diabetes
- ... and many others

Broaden Your passions

- Do not restrict Yourself to what You're good at
- Learning how to learn improves You both in Your area of expertise and in topics You don't have natural talent for

Wrong methods

- Highlighting text in a manual
- Consuming too much material in one sitting
- Robotic motions depleted of real engagement and effort

Good methods

- Synthesizing material in Your own words
- Trying to recollect concepts learned
 - Reconciliation
 - Memories are living parts and may change and strengthen upon access
- Interleaving
 - Doing mixture of different kinds of problems requiring different strategies
- Start early
 - Give Yourself more time to master harder concepts
- Start unpleasant task first thing in the morning - at least for a little
 - Eat Your frogs first

Pitfalls

- Einstellung
 - When initial thought You had in mind prevents better idea or more appropriate solution
- Illusion of competence
 - Believing that You are learning when solution is already there
- Overlearning
 - Continuing study after it is well understood
 - Waste of valuable time

Physiology

Neurotransmitters

- Acetylcholine
 - Affects focused learning and attention
- Dopamine
 - Plays role of a reward signal in conditioning
- Serotonin
 - Affects social life and risk-taking behavior

Hippocampus

Part of brain that plays important role in the consolidation of information from short-term memory to long-term memory

Memory

Short term memory

- Inefficient mental blackboard
- About 4 items at once
 - Previously assumed to be 7

Long term memory

- Storage warehouse
- Way of moving items from short term to long term memory

Spaced repetition

- Brain needs time for synaptic connections to form and strengthen
- Mortar needs to dry before another layer of bricks can be put

Methods

- Make memorable image representing key items
 - Visual
 - Spatial
 - Aural
 - ... and others
- Write down with pen
- Memory palace technique
- Create acronyms and memory hooks
- Draw mind maps

Practice

Learning by doing

- Important in any area You want to acquire expertise

Deliberate practice

- Focusing intently on parts that are more difficult
- Bring ideas into Your reality
- Neurons become linked
- More abstract ideas need more practice

Chunking

Chunk

- Mental leap that unites scattered bits of information through meaning
- Helps understand new concepts
- Minichunks organize to chunks and they in turn organize into bigger chunks
- Compresses knowledge so that it takes less space in working memory

Transfer

- Created in three steps
 - Focused attention
 - Understanding of the basic idea
 - Practice to gain mastery and sense of the big picture
- Chunks from one area can help learn chunks in different areas that share commonalities

Procrastination

Attempt to switch attention from something painful

- Everybody has this problem to some extent
- Normal to have negative feelings about beginning of learning
- Negatively impacts many aspects of Your life

Pompadour technique

- 25 minutes of intent focused work
- 5 minutes of break for leisure activities as reward
- Every four pomodoros long break of 25 minutes

No multitasking

- It kills Your brain and career
- Switch off Your phone
- Disable alerts
- Use noise-muffling ear blockers
- Octopus of attention has limited number of limbs

Concentrate on the process not on the product

- Process means flow of time and habits and actions associated with that flow
- Product is an outcome to accomplish

Tools

- Task list
- Planner journal

Habit

- The cue
- The routine
- The reward
- The belief