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- Executive function abilities, such as emotional self-control, persistence, and goal directed behavior.
 - Dependability is the trait most valued by employers
 - Perseverance, dependability, and consistency are the most important predictors of grades in schools
 - These pre-frontal cortex controlled functions are not limited by IQ or general intelligence and are malleable through interventions especially during school years
- William James definition of creative intelligence: a native talent for perceiving analogies is ... the leading fact in genius of any order
- Encourage neural connectivity by promoting novel joined up thinking
- John Norton: "The student who leaves having memorized the textbook has not been truly educated, even if he has passed every exam. The problems of tomorrow are not going to be solved with the knowledge of yesterday. The problems arise fresh each day, and creativity is our best chance for success."
- New types of teaching, expectations for working independently with minimal guidance on how to do so, increased amounts of information to learn, requirements to use not just memorize facts
- New challenges depend on executive functions not yet fully developed and rarely used previously
- Students are not usually taught how to learn, study, organize, prioritize, review, or actively participate, nor the reasons for any strategies or procedures they are told to use. Before teaching information can be efficient, engaging and successful, students need to learn how to learn, instead of passively memorizing force fed fact-lettes
- Higher learning is about applying and communicating... demonstrate these executive function skills and conceptual knowledge by comparison/contrast, giving new examples of concepts, transferring knowledge by applying big ideas to solve new types of problems never solved before
- Students faced with more work and insufficient executive functions to organize or delay immediate gratification for long-term goals, make poor decisions that further diminish their success (ie cramming without mental manipulation so no long-term memory, poor sleep and exercise)
- Poor study habits result in poor performance lowering sense of what is achievable and negative mindset. Less willing to take on challenge or persevere through setbacks
- Prefrontal cortex (executive functions) when formed into complete networks all for patterned information to be used for organizing, analyzing sorting connecting, prioritizing self-monitoring, self-correcting, assessment of one's strengths and best strategies, abstractions, creative problem solving, attention focusing, and linking information to appropriate actions
- Core concepts as superstructure for linking related subsequent information infrastructure into growing related neural networks. Better able to abstract

and use concepts for transfer and facts become strongly incorporated (neuroplasticity—practice makes permanent , neurons that fire together, wire together) into more frequently activated larger networks for sustained long term conceptual memory

- Brain operates most efficiently when the goal is known and desired—activation of prior knowledge for consolidation of new input in the hippocampus; activation of the suprastructure of conceptual networks for a desired output; increased dopamine when goals are planned for achievable challenge and feedback that includes opportunities for prediction and opportunities for students to recognize their incremental goal progress, not just final products (bonus: dopamine release which increases acetylcholine release (focus, attention, memory)
- The experiences and associated pleasure increases neural network construction and interconnectivity through neuroplasticity and they essentially become more intelligent
- Students begin their school years with minimal development of their networks of higher thinking skills — last part of the brain to mature and undergo their greatest changes during the years of elementary through college
- As we know from neuroplasticity research, almost every part of the brain is influenced by experience. The use it or lose it rule of neuroplasticity applies Teachers who incorporate active use of higher-thinking skills in their instruction influence these most powerful powers of reasoning, analysis, and creative intelligence.
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