Reading: Focused versus Diffuse Thinking

Focused versus Diffuse Thinking

Only dip in to read what is of interest to you - these readings are entirely optional.

Chapters 1-3 of *A Mind for Numbers* are especially helpful in providing helpful information and additional exercises related to the materials of Module 1.

Worthwhile Additional Popular Works

Access Notes: The New York Times has limited (5) free articles per email address. Mind Tools and The New Yorker are paid (firewall) services.

- Badre, David, "Tips from Neuroscience to Keep you focused on hard tasks", *Nature*, 2021-03-15 doi: https://doi.org/10.1038/d41586-021-00606-x
- Scott Young, "I was wrong about speed reading: Here are the facts," January 2015. This excellent blog post nicely summarizes what is known in relation to speed reading.
- John Dunlosky, "Strengthening the Student Toolbox: Study Strategies to Boost Learning," *American Educator*, Fall, 2013. This excellent, comprehensive article is written by one of the top researchers in learning.
- Michael Friedman, "Note-taking tools and tips," (October 15, 2014), Harvard Initiative for Learning and Teaching. This article, and an article embedded within it, ("Notes on Note-Taking: Review of Research and Insights for Students and Instructors"), have very useful insights into how to improve your note taking.
- Maria Konnikova. (January 11, 2014), "Goodnight. Sleep Clean," *The New York Times*.
- John Hamilton. (October 17, 2013). "Brains Sweep Themselves Clean of Toxins During Sleep." *NPR All Things Considered*.
- Mind Tools, "The Pomodoro Technique® Staying Focused Throughout the Day."
- Anne Trafton. (July 21, 2014), "Try, try again? Study says no: Trying harder makes it more difficult to learn some aspects of language, neuroscientists find." *Science Daily.*
- Richard C. Mohs. "How Human Memory Works." *How Stuff Works*. Notice that what Dr. Mohs calls "short term memory" in his excellent article is almost the same as "working memory." Also, Dr. Mohs retains the "seven slots" theory of working memory--researchers still differ in their perspectives about this.
- Dan Rockmore, (Nov 7, 2019) "The Myth and Magic of Generating New Ideas," *The New Yorker.*
- Gretchen Reynolds. (April 30, 2014). "Want to be More Creative? Take a Walk." *The New York Times.*
- Ferris Jabr, (September 3, 2014). "Why Walking Helps Us Think." *The New Yorker.*
- Brigid Schulte, (May 16, 2014). "For a more productive life, daydream." *CNN Opinion.*
- Robert Wright, (April 21, 2012). "How to Break the Procrastination Habit" *The Atlantic*. (Charles Duhigg's book, *The Power of Habit*, which is mentioned in the article, is also great!)
- Daniel J. Levitin, (August 9, 2014), "Hit the Reset Button in Your Brain," *The New York Times*.
- Charlie Tyson, (August 14, 2014), "Failure to Replicate," *Inside Higher Ed*. This is a very interesting overview article about the state of affairs in education research.

- Pam Harrison, (September 8, 2014), "Sleep on It: Sleep Consolidates Memory of New Motor Task," *Medscape*. Although this article deals with motor tasks, there are obvious implications related to the importance of sleep in consolidating other areas in learning. (You'll need to join to read the article, but it's free.)
- National Numeracy. A website by an independent charity that is devoted to helping every person in the UK to reach a level of numeracy skills that allow them to meet their full potential.

More Recent Research

- Boyce, Richard et al. "Causal evidence for the role of REM sleep theta rhythm in contextual memory consolidation." Science 352, 6287 (2016): 812-816.

Heavier-Duty References (as mentioned in this week's videos)

Video: Introduction to the Focused and Diffuse Modes

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- Immordino-Yang, M. H., J. A. Christodoulou, and V. Singh. "Rest Is Not Idleness: Implications of the Brain's Default Mode for Human Development and Education." *Perspectives on Psychological Science* 7, no. 4 (2012): 352-64.
- Moussa MN, Steen MR, Laurienti PJ, Hayasaka S (2012) “Consistency of Network Modules in Resting-State fMRI Connectome Data.” *PLoS ONE* 7(8): e44428. doi:10.1371/journal.pone.0044428.
- Raichle, Marcus E, and Abraham Z Snyder. "A Default Mode of Brain Function: A Brief History of an Evolving Idea." *NeuroImage* 37, no. 4 (2007): 1083-90.

Video: Using the Focused and Diffuse Modes: (Or, a little Dalí will do ya)

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Video: What is Learning?

- Michael D. Fox and Michael Greicius, Clinical applications of resting state functional connectivity , *Front. Syst. Neurosci.*, 16 June 2010.
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- Guang Yang et al. Sleep promotes branch-specific formation of dendritic spines after learning, *Science* 344, 1173 (2014).

Video: A Procrastination Preview

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- Lyons, I.M., and S.L. Beilock. "When Math Hurts: Math Anxiety Predicts Pain Network Activation in Anticipation of Doing Math." *PLoS ONE* 7, no. 10 (2012): e48076.
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Video: Practice Makes Permanent

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- Dunlosky, John, Katherine A Rawson, Elizabeth J Marsh, Mitchell J Nathan, and Daniel T Willingham. "Improving Students' Learning with Effective Learning Techniques: Promising Directions from Cognitive and Educational Psychology." *Psychological Science in the Public Interest* 14, no. 1 (2013): 4-58.
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