***Making it Stick***

**Effective Learning Strategies**

Read each of the learning strategies below and think about how effective each strategy is for improving your learning. Rate each strategy on a scale from 0 to 5, using this scale:

0 = the method is ineffective and probably will not help my learning

5 = the method is highly effective and will help me learn in college.

\_\_\_\_\_1. Self-explanation—explaining how information you are trying to learn is related to what you already know.

\_\_\_\_\_2. Highlighting—highlighting or underlining key material in a text.

\_\_\_\_\_3. Distributed practice (spaced practice)—practicing/studying in multiple sessions spaced out over time.

\_\_\_\_\_4. Concentrated (massed) practice—practicing or studying information in one long session.

\_\_\_\_\_5. Rereading—studying by reading over notes, PowerPoints, or the textbook a second time.

\_\_\_\_\_6. Imagining—forming mental images of material and connections between concepts.

\_\_\_\_\_7. Summarization—writing summaries of material to be learned.

\_\_\_\_\_8. Practice testing—taking self-generated or teacher-provided tests or quizzes about material to be learned.

\_\_\_\_\_9. Interleaved practice—within a study session, mixing short periods of studying different kinds of material from the same class.

\_\_\_\_\_10. Teaching—teaching material to someone else.

\_\_\_\_\_11. Graphic mapping—organizing material with maps connecting concepts in various ways.

\_\_\_\_\_12. Finding teachers whose teaching methods match my learning style (visual, auditory, kinesthetic, etc.).

\_\_\_\_\_13. Desirable difficulties—challenging myself by posing tough questions or problems to solve.

Below is an explanation of what the research tells us about effective and ineffective learning strategies. Compare this information with your ratings on the front page of this handout.

**1. Self-explanation.** Moderately effective. Works best when the learner explains how new material is related to what he/she already knows.

**2. Highlighting**. Not effective. The only people who benefit from this strategy are the people who make highlighters. Underlining can work a little better if accompanied by elaborations in the margins.

**3. Distributed practice (spaced practice).** Highly effective. Distributing practice in shorter sessions over longer periods of time produces long-lasting learning, especially when combined with interleaving.

**4. Concentrated (massed) practice**. Not effective. If the ultimate goal is long-term learning, cramming does not work!

**5. Rereading**. Not effective. Unless students are actively making connections or generating new examples in the second reading, little or nothing is gained.

**6. Imagining.** Moderately effective. Involves a form of deep processing that will aid memory and comprehension; may not work well with highly abstract material in which images are difficult to form.

**7. Summarization.** Potentially effective. Works best when it involves elaboration or the connecting of previously studied material with new material.

**8. Practice testing** (or self-testing)**.** Highly effective. Tests need to be low-stakes and frequent. Testing works because it requires retrieval of major ideas from memory.

**9. Interleaved practice.** Effective. Most effective when combined with distributed practice. Ex: Interleaving French grammar with vocabulary over multiple, spaced study sessions.

**10. Teaching.** Highly effective. If you really want to learn something, teach it! Teaching is similar to self-explanation but more effective because of the feedback between the “teacher” and the person receiving the information.

**11. Graphic mapping.** Effective. There is less research on graphic mapping than on most other strategies, but research suggests it is effective.

**12. Finding teachers who match my learning style.** Not effective. The truth is that all learners benefit from learning in many different modalities and with many different approaches. Focus instead on using active learning strategies.

**13. Desirable difficulties.** Highly effective. We learn best when we have to mentally struggle a bit. To be in the “desirable” range, tasks have to be challenging without being impossible.

**References**

Bjork, R. A., Dunlosky, J., & Kornwell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology*, *64*, 417-444.

Brown, P. C., Roediger, H. L., III, & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Cambridge, MA: Harvard University Press.

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students’ learning with effective techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, *14*, 1-47.

Fiorella, L., & Mayer, R. E. (2015*). Learning as a generative activity: Eight strategies that promote understanding*. New York: Cambridge University Press.

Willingham, D. T. (2009). *Why don’t students like school?: A cognitive scientist answers questions about how the mind works and what it means for your classroom*. San Francisco, CA: Jossey-Bass.