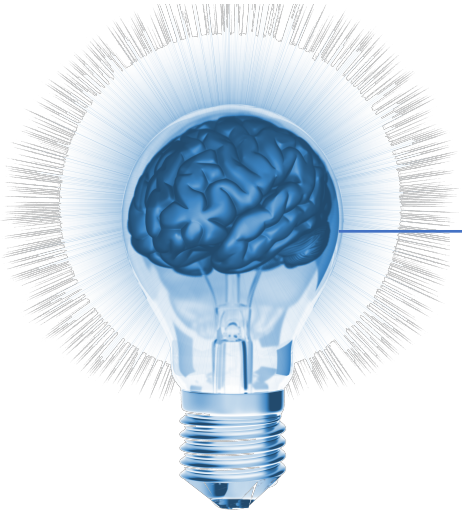

Learn Like A Genius

Gregg Goodhart, The Learning Coach ggoodhart.com

Learn Like A Genius YouTube
www.youtube.com/channel/UCc9LSycg7J0DmFZOEwdTUOA
The Art And Science Of Practicing FB Group
www.facebook.com/groups/1234149963385549/

Using Brain Science for Accelerated Skill Development

Retrieval Practice

Spacing

- The spacing effect is "a case study in the failure to apply the results of psychological research" (Dempster, 1988, p. 627). And this refers to research that has been available since the late 19th century (Ebbinghaus)
- This technique is so unusual and frustrating that even when students experience the benefits, and this includes in academic work, many will choose to go back to older less efficient ways of learning.

Contextual performance is different than practice

- Practice – isolating and working on small sections over and over, applying things like contextual interference to increase facility (speed, clarity, ease of execution). This uses working memory which holds about 7-9 pieces of information at any given time. Our corrections and improvements are informed by our recent memory of what we just did.
- Contextual performance – performing a piece in a recital/jury/competition/concert or any other, "Do or die, one and done," situation. This requires accessing information from long-term memory into working memory, which takes time if it is not practiced. This is where testing and performance anxiety originate. What seemed easier to play (or remember) in the moment while we held it in working memory in practice seems 'forgotten' when we have to access long-term memory in the moment of performance.

How to do it

- To practice this we can put periods of forgetting, small at first then longer and longer, in between our performances of the things on which we are working.
- Once a section is under the fingers begin doing this by playing that section once at a slow and controlled tempo. Do not go back and correct any mistakes, but remember them.
- Do this every 5-7 minutes in practice. In between work on anything else. Just insert this one repetition 'out of the blue', which is how it will occur in actual performance. There are several apps that can time intervals like this in an ongoing manner.
- Check the section in about 3 days.

Interleaving

- Similar to spacing, but different. Spacing can occur over hours, days, weeks. Interleaving occurs within single sessions by regularly switching what we are working on.
- Conventional wisdom is that working on something doggedly for long periods of time is the best way to learn/improve. One reason for this is the presence in working memory of whatever information is needed to improve the next phase. The goal, however, is to get this information into long-term memory so that it is permanently present.
- In music don't work on a piece or section of a piece for more than 10 minutes or so. 5 is good if your practice sessions are shorter. If want to work longer on those sections return to them later after a period of working on other things. The key is to move on before you really get it.
- The reconstitution or relearning of what you learned during the last section has powerful lasting effects for long term learning

The idea with spacing and interleaving is that long-term strength of learning is increased if short-term learning is made to be more confusing/challenging *in specific ways. It is important to note that everything that makes learning more confusing is not beneficial, and things that might not be beneficial at one stage of learning may be beneficial at others. Navigating this is the high art of teaching.*

- If used correctly learners will actually appear to do worse in their learning at first, and this applies to many of these learning interventions. This is part of the process and what one researcher identifies as one of the most significant fallacies in learning. Professor Robert Bjork describes this in a podcast.

> . . .to the degree you interpret current performance as a valid measure of learning you will do all sorts of things wrong as a teacher, as a student managing your own studying, in terms of judgments you make about whether you can stop studying, to keep studying, what you should study. All of those things are kind of at risk so to speak if you interpret your current performance as learning. (Kime, 2018, 28:58)

Some reading

The best place to start for retrieval practice is the book *Make It Stick*

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