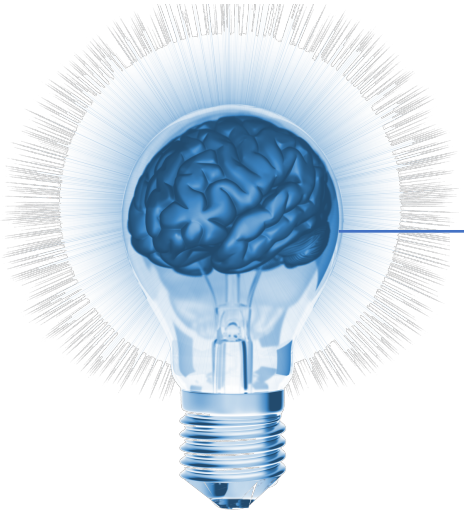

Learn Like A Genius

Gregg Goodhart, The Learning Coach ggoodhart.com

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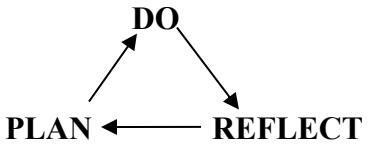
Using Brain Science for Accelerated Skill Development

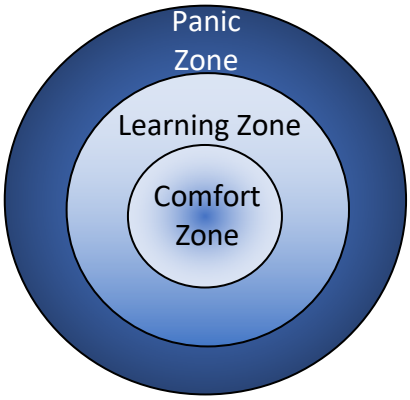
Deliberate Practice

- Effortful activity generating constant feedback that guides the refinement of that activity over and over and over.
- The term first appeared in the 1993 paper, "The Role of Deliberate Practice in the Acquisition of Expert Performance," published in *Psychological Review* by the leading researcher in skill development K. Anders Ericsson and some of his colleagues. (Ericsson, Krampke, & Tesch-Romer, 1993)
    - He refined and updated this in, "The Influence of Experience and Deliberate Practice on the Development of Superior Expert Performance." (Ericsson, 2006)



- Cognitive researchers have developed an inclusive model for the Plan-Do-Reflect model calling the three phases Forethought-Performance-Self Reflection, as well as addressing other environmental and psychological factors surrounding the paradigm of skill development. (Zimmerman, 2007)
- "One characteristic of deliberate practice is that it is not inherently enjoyable." (Ericsson, Krampke, & Tesch-Romer, 1993, p. 368).
    - It is work. Whereas physical work is taxing on the body, this type of intellectual work is taxing on the brain.
    - This state of difficulty is the 'sweet spot of learning'. I, half-jokingly, have called this the 'burn of learning' or the blearn – Feel the Blearn! Of course I later found it has a real name. Two UCLA researchers have described this condition as, "Desirable Difficulty." (Bjork & Bjork, 2011, p. 58) Writing about the current state of education professor Bjork writes, "Optimizing instruction will require unintuitive innovations in how the conditions of instruction are structured." (p. 56). Or to put it colloquially – learning is not what many people think that it is.

- Vygotsky and a version of the Zone of Proximal Development



> . . .deliberate practice requires that one identify certain sharply defined elements of performance that need to be improved and then work intently on them. Examples are everywhere. . .Tiger Woods has been seen to drop golf balls into a sand trap and step on them, then practice shots from that near impossible lie. The great performers isolate remarkably specific aspects of what they do and focus on just those things until they are improved; then it's on to the next aspect." (Colvin, 2010, p. 68)

- How most kids do homework is not deliberate practice. No wonder classes seem hard. Kids who do all the assignments *as assigned when assigned* in their homework do not need to study for tests to get A's (rich mental model). I have known plenty of honors students who do this and it has everything to do with how they prepare not 'giftedness'.
- Might that knowledge benefit you, or any students you know? If they are convinced of their own efficacy then how smart they are is entirely up to them.
- Recovery periods and sleep.
  - Studies show that high achievers take more naps (Ericsson, Krampke, and Tesch-Romer 376-377).
    - Memory is consolidated.
    - Recently it has been discovered that a 'sanitation system' called Metabolite Clearance that is not active during waking hours flushes out waste in the brain during sleep (Xie et al. 2013).
      - Practice before school, first thing in the morning, on weekends, and nap.
  - Recovery Periods.
    - Engaging in deliberate practice is intellectually taxing (mental fatigue) and breaks need to be taken when serious confusion occurs.
    - Current research shows that world class experts cannot engage in more than 4-5 hours of deliberate practice daily. (Ericsson, 2006) 90 continuous minutes of deliberate practice at a time seems to be the limit. Consider this if you want to introduce your students to this concept. Generally 45 minutes on and 15 minutes off works for high-level study. For beginners start with five minutes. This is far better than 15 minutes of unfocused practice.
    - When true mental confusion occurs, however long that takes, a recovery period is necessary.
    - Leisure activity. (Ericsson, Krampke, & Tesch-Romer, 1993)
    - Plan recovery periods.
  - Focus is like a muscle. Those new to this type of intense concentration will only be able to lift a little intellectual weight until exhaustion. Start with little bits at a time, it will grow, but do not push through genuine mental fatigue. Take a break and do something that takes little intellectual investment.

- Repetition – I can't stress enough the importance of more than a little thoughtful repetition (did I do it right? If not how do I fix it? If I don't know ask my teacher, etc.) in many different contexts and varieties in the pursuit of effortless expert performance. This is not to be confused with massed repetition (i.e. 100 perfect reps every day) which is inefficient.
    - It is fine to make mistakes. It is not fine to not recognize and try to correct them. Pay attention.