



Deliberate Practice – is 10,000 hours enough?

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The 10,000 hours idea



*Dan McLaughlin, aiming to become pro-golfer through 10,000 hours of deliberate practice – following idea of Prof Anders Ericsson of Florida State University – author of Peak: Secrets From the New Science of Expertise (2016). Last posting – April 2015 – handicap = 5.5
Image - <http://www.wbur.org/onlyagame/2015/06/06/dan-mclaughlin-plan-malcolm-gladwell>*

Deliberate Practice

“...professional expertise has been judged by length of experience, reputation, and perceived mastery of knowledge and skill. Unfortunately, recent research demonstrates only a weak relationship between these indicators of expertise and actual, observed performance. In fact, observed performance does not necessarily correlate with greater professional experience. Expert performance can, however, be traced to active engagement in deliberate practice (DP), where training (often designed and arranged by their teachers and coaches) is focused on improving particular tasks. DP also involves the provision of **immediate feedback**, **time for problem-solving and evaluation**, and **opportunities for repeated performance** to refine behavior.”

Eriksson (2008) <http://europepmc.org/abstract/med/18778378>

Some points from Ericsson's book –

- DP is not easy – it is “out of the comfort zone”
- If you are plateauing – not “try harder”, but “try differently” – for example memorising random digits – to get beyond 7-8, need to employ mental structures – memorising as chunks of around 3 digits – Under-grad Steve Faloan learned to recall 82 digits (Ericsson, K. A., Delaney, P. F., Weaver, G., & Mahadevan, R. (2004). Uncovering the structure of a memorist's superior "basic" memory capacity. *Cognitive Psychology*, 49, 191-237)
- Motivation is key – for example meaningful positive feedback and powerful specific goals

Mental Representations



Alexander Alekhine, in 1924 completed 26 simultaneous chess games – blindfolded. Experts build up mental representations of their area – for example chess grandmasters can visualise games, see overall patterns, zoom in and review options for different moves.

Research by Herb Simon indicates that chess grandmasters see patterns on the chess board rather than remembering where each individual piece is positioned – resulting in a hierarchical arrangement of around 50,000 “chunks” of such chess patterns. (Though recent research suggests fewer chunks in short-term memory, which include up to 15 items – for Masters - <http://www.tandfonline.com/doi/abs/10.1080/09658210344000530?src=recsys>)

Expert performance is likely to rest on memory-based expertise – used to respond quickly and effectively in relevant situations. For example better football players predicted the next moves when game video stopped, and better able to remember player positions and actions - <http://axonpotential.com/wp-content/uploads/2011/05/2003-Ward-Williams-JSEP.pdf>

Image: <https://en.chessbase.com/post/kavalek-in-huffington-alekhine-and-the-art-of-che-160513>

Memory



London cab drivers study for 3-4 years to learn The Knowledge – the streets, buildings and routes of central London. Those who succeed in passing – compared to unsuccessful candidates, and to other adults – grow their (posterior) hippocampus – memory central of the brain – the adult brain grows and changes in response to challenges

But – the licenced taxi drivers (who had acquired The Knowledge) did better on a test of London landmarks, and worse on a standard spatial memory test – compared to the controls. There may be a cost to acquiring such knowledge.

(Katherine Woollett and Eleanor Maguire, 2011 - [http://www.cell.com/current-biology/abstract/S0960-9822\(11\)01267-X?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS096098221101267X%3Fshowall%3Dtrue](http://www.cell.com/current-biology/abstract/S0960-9822(11)01267-X?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS096098221101267X%3Fshowall%3Dtrue))

Image: <https://blackcabheritagetours.co.uk/aboutus/london-taxis/>

Expertise



String players have bigger representation of the fingers of the left (the “fingering hand”) in the brain, and the region of the brain that usually manages the left palm is also recruited by the fingers. The earlier the musician starts learning – the greater the expansion of the zone that controls the left fingers – Thomas Elbert and others (1995) - http://kops.uni-konstanz.de/bitstream/handle/123456789/10711/Elbert_1995_Increased_Cortical_Representation.pdf?sequence=1

Image: Chloe Moretz plays If I Stay - <https://www.youtube.com/watch?v=zXinlav-BeU>

Critical periods?



“Perfect pitch” – the ability to identify individual musical notes – as demonstrated by Mozart and other rare prodigies – can be taught. Children aged 2-6 had five short training sessions each day to identify 14 chords. All 22 who completed the training were able to identify unique notes - Ayako Sakakibara, 2014 - <http://pom.sagepub.com/content/42/1/86.short>

Image: http://www.huffingtonpost.com/samantha-rodman-phd/my-husband-and-i-fight-ov_b_9064848.html

Is Deliberate Practice the way?

A 2014 “meta-analysis” (88 studies including 11,000 participants) – difference attributable to DP:

26% *games*

21% *music*

18% *sports*

4% *education*

<1% *professions*

Practice is “*important, but not that important*”; **people may require vastly different amounts of deliberate practice to reach the same level of skill.**

- Brooke Macnamara and colleagues (2014) - <http://scottbarrykaufman.com/wp-content/uploads/2014/07/Macnamara-et-al.-2014.pdf>

While practice is correlated with expertise, it may be that the motivation to practice is inherited – “*it’s more likely to find a pair of identical twins who have both accumulated over 10,000 hours of practice than a pair of fraternal twins who have both accumulated this amount of practice ... while extensive practice is necessary to become a highly skilled musician, genetic factors influence our willingness to put in that practice. More generally, this research suggests that **we gravitate toward and persist at those activities that we have an aptitude for from the outset.***”

Miriam Mosing and colleagues (2014) - <http://pss.sagepub.com/content/early/2014/07/30/0956797614541990.abstract>