Education Theory Made Practical 2: Deliberate Practice

(From the E-i-C: Here are links to the previous chapters in this series <Zone of Proximal Development; Transformative Learning Theory; Spaced Repetition Theory; Self-Determination Theory; Organizational Learning; Dreyfus Model of Skill Acquisition; Digital Natives> We need your help. Before we publish all of these chapters as an eBook, we want the health professions community to weigh in on the confusing, missing, and disputed sections of each chapter. Please include your comments at the bottom of the post. We will acknowledge your contribution in the forthcoming eBook).

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Name of Theory

Deliberate Practice

Main Authors or Originators:

K. Anders Ericsson, PhD
Part 1: The Hook

Bob is on faculty at an academic Emergency Medicine residency program. He is a dedicated educator, and has been giving presentations almost weekly since medical school. While a faculty member, he has given numerous local lectures and several regional conferences lectures, all with good feedback from attendees (mostly in the form of likert scale feedback on forms). He wants to lecture at a national level, but doesn't know if he has the chops to connect with his audience and maintain engagement compared to some of the big-name lecturers.

Bob is not worried about the content of his lectures, as there are several topics where he feels like he has complete grasp of the research and practical applications of the material. However, he worries that he just wasn't born with the "right stuff" for national scale lectures -- the lecturers he tries to emulate appear to have innate and effortless charisma and stage presence, on top of topic expertise.

At a national conference he had a chance to talk with Sherry, one of his "teaching-idsols." During their conversation, he mentioned his goal to teach at a national conference, but quickly demurs. Sherry offers to help mentor Bob in his presentation skills, and she encourages him to apply for a new speakers forum that would be a great opportunity to take a step onto the national stage. Determined to pursue his educational goal, Bob takes Sherry up on her offer for coaching -- advice and feedback. The new speaker's forum is coming up in just a few months, and if Bob does well, there is potential for other future teaching opportunities.

Part 2: The Meat

Overview of this theory

The theory of deliberate practice hinges on the idea that innate talent or ability plays only a small part in the acquisition of expertise in a particular area. Rather, expertise develops after years of focused practice in that area. However, the theory considers that not all types of practice are equal. Simply performing a task repetitively is not sufficient. Deliberate practice is focused on the improvement of specific tasks and is often supervised by a teacher or mentor. This type of practice is essential in the development of expertise. Other important components of deliberate practice include the opportunity for repetitive performance of the activity, time allowed for problem solving, and feedback from a coach.
Background about this theory

Prior to the work of K. Anders Ericsson, there were varying ideas of how one acquired expertise in a field or application. One commonly accepted idea was that certain people had innate talents or abilities that gave them an advantage when mastering a skill. Another concept was that experience alone would enable someone to acquire the skills needed to become an expert. The theory of deliberate practice was developed by examining experts in multiple fields, from music to sports to chess. This research examined several factors in determining the paths that these experts took to get to that point. Factors considered included age at onset of practicing the skill, hours per week in practice and the characteristics of that practice, time spent in activities outside of that skill, and amount of time required to acquire expertise, amongst other factors.

Somewhat surprisingly, Ericsson found that innate talent or genetic predisposition had very little to do with the likelihood of developing expertise in an area. With the exception of height, which is difficult to modify, other factors appeared to be the result of years of practice rather than chance. Even something such as “perfect pitch” appeared to be teachable rather than only acquired through inborn chance. Additionally, he found that most that became experts in a field started at an early age and on average, put in approximately 10 years of practice in that endeavor. This amount of practice was consistent, even in those that were considered to be exceptionally gifted or talented at an early age.

When examining the characteristics of the types of practice, Ericsson found that not all types of practice were equal. He considered that merely engaging in a type of activity repetitively did not appear to impart the skills necessary for mastery of a particular field. Rather, the concept of “deliberate practice” appears to be a common factor in the practice habits of those that acquired mastery. When defining “deliberate practice”, Ericsson noted several factors in common with this type of practice, across disciplines. First, the practice was often supervised or associated with an instructor or mentor. Secondly, the practice was performed with a well-defined goal. Third, the subjects were motivated to improve. Fourth, feedback was available, primarily through the association with an instructor or mentor. Finally, there were opportunities for repetition and refinement of the technique. Over time, many students became skilled enough in the practiced activity that they were able to serve as their own instructor, monitoring their progress themselves.

Ericsson also evaluated performers who had experience in a field, but had not reached the level of expert. He found that, overall, these students had not put in as much overall time as the expert performers and that they particularly had not put in as much time in the above described “deliberate practice”. Interestingly, experience alone was not sufficient to make someone an expert in a field. After the acquisition of a certain level of skill, simply repeating a task over and over did not yield significant improvements in the abilities of the student. When the repetition of an activity does not include the characteristics noted in the description of deliberate practice noted above, it does not appear to add any value to the student.

Modern takes or advances in this theory

Ericsson’s theory was first published in 1993. Since then, it has served as foundation work in the field of performance enhancement. Researchers continue to agree that expert-level performance requires long-term commitment to practice. Deliberate practice itself has become a topic of focus in widely popular books such as Outliers and Talent is Over-Rated. Much of the popular literature and discussion on the topic revolves around the concept of the “10,000 hour rule.” This is based off of Ericsson’s findings that expert level performers average this much time to achieve the skills they demonstrate. Ericsson actually views this concept as a misinterpretation of his research, noting that working 10,000 hours (or more) at something does not enhance performance unless the practice is deliberate.

The concept of deliberate practice and development of expertise has also permeated the medical education realm. It serves as a cornerstone for simulation based learning, where the provider follows a pattern of repeated, specific steps and scenarios to improve specific realms of performance. However, Ericsson’s theory is also applied more broadly to understanding the acquisition of expert level performance in the practice of medicine generally.

While Ericsson’s theory is a much more comprehensive view of how expert performance is achieved, the vast majority of the derivative literature and attempts to apply it to clinical medicine focus solely on deliberate practice. This approach is most relevant to speak to the needs of the majority – that is, it allows deliberate practice to be used as a tool for performance enhancement without concern for being an expert, let alone an eminent figure in a field, which is an area of distinction in Ericsson’s research. There are numerous practical blogs and electronic communities that employ principles promoted by Ericsson’s study.
Erlsson's work can be applied to a number of areas within medical education and clinical practice. Ericsson's original description of deliberate practice focused on the years and years of attention and practice that go towards the making of an expert in a field. However, the principles of his theory, mainly that practice towards improvement in an area should be deliberate, focused on a specific goal, and supervised by a mentor with experience in the area, can be applied to many areas without reaching the expansive definition of an expert. For example, a resident that is working a shift with a faculty member that has expertise in the area of bedside ultrasound can utilize the theory of deliberate practice to set a goal to refine their echo technique on that shift. They can seek out patients with cardiac complaints and perform ultrasounds under direct supervision, seeking feedback afterwards. On another shift, the resident may perform and record echo images to review with the faculty at another time, again seeking feedback on their technique.

Additionally, a junior faculty member can apply the theory in attempting to develop their teaching skills in seeking out a “master teacher” as a mentor. This mentor can directly observe the junior faculty in action in a teaching scenario, such as in a small group session, and offer feedback.

As noted above, simulation cases offer an opportunity for deliberate practice, as the goal is typically focused at the beginning of the case (for example, a case might focus on airway management). These cases are typically supervised and/or recorded, offering opportunities for specific and constructive feedback, as well as further opportunities for practice.

### Annotated Bibliography of Key Papers on this theory


This is an excellent introductory paper for the topic of expert performance applied to academic medicine. The original research article published by Ericsson is fairly extensive and detailed. This is a much shorter article that provides brief domain evidence from other disciplines, but also provides insight into achieving expert performance in medicine. For those unfamiliar with the concepts of deliberate performance, this is a much more manageable article to provide an introduction to the topic. Also, since the article is written by Ericsson, it remains true to the source article without introducing author bias than be present in summary articles written by others.


This research paper examines deliberate practice in medical student performance. Overall, it showed evidence of increasing use of deliberate practice as the student became more advanced. The authors assert that as novice learners, any type of practice will enhance performance (first year medical students). As they transition to expert learners, though, it becomes increasingly important for the students to identify weakness, plan their education objectives, and honing their practice style and level of engagement. It creates a methodology that could be used to evaluate the effect of deliberate practice, and encourages its application to later years of study including residency training.


Written by Dr. Ericsson and Robert Pool, this book expands the deliberate practice theory into additional practical realms. This text spends a fair amount of time applying the theory to medicine, and provides a broader discussion of the appropriate interpretation of Ericsson's original theory.
Limitations of this theory

Although currently the theory of deliberate practice is widely accepted in performance enhancement research, one of the more nuanced requirements for its application involves the fact that Ericsson noted that it is most applicable to established fields of practice (such as games of chess, playing music, sports). The theory certainly loses some of its applicability when attempting to apply it to less well-defined fields (such as painting or performance art) where fresh, new ideas trump predicted results that come from deliberate practice.

The concept of creativity is not truly addressed by Ericsson, but manifests itself in the real world when established fields experience a seismic shift based on a new advancement. Such advancements may occur by deliberate effort at the periphery of the field of knowledge by eminent researchers. They may also manifest by creative happenstance, and such events may not even involve experts in the field. A common consulting event in industrial and organizational psychology is to bring in a novice to ask very basic questions, such as “why do we do this step first?” It has been shown that asking such rudimentary questions can highlight problems in an organization that may be dismissed as simply matters of fact by experts.

Lastly playing devil’s advocate — fundamental to this theory, is that it requires a motivated learner to be successful — which in practicality may not always be the case. Furthermore it also requires time and practice in dedicated mentoring and coaching of skills (Technical and non-technical); this process requires faculty or peer time — as well as faculty development to empower the teachers within this construct.

Part 3: The Denouement
With Sherry’s encouragement, Bob agrees to sign up for a spot at the new speaker’s forum. Together, they go over a lecture he has given a few times with the residents at his residency program. Sherry helps him to edit the lecture by using her own extensive experience in designing lectures, and by taking into account the open ended audience feedback received. The audience feedback is that they didn’t feel a strong connection to the subject that Bob was presenting. They work create an opening story to connect with the audience — based on an experience personal to Bob. Sherry also works with Bob to streamline the lecture so that transitions are clearer, and slides are focused on important information — while cutting out much of the extraneous information. Bob practices giving the lecture several times to Sherry alone and she gives him feedback on his presentation style to slow down his pace of speech, to remember to focus on his take home messages, and to continue to refine his opening engagement strategy (story of his experience paired with connecting it to the audiences prior experiences with his topics.) Bob takes her suggestions, fineses his slides to be even more on topic and practices on his own — he even wrote out an outline on his talk — with specific key points he wanted to cover.

After this initial series of practices, Bob gives the lecture to a Grand Rounds presentation within his department, with Sherry in attendance. He receives feedback from the audience, as well as from Sherry. He uses their suggestions to further refine the his engagement strategy/introduction to the topic and to further refine his presentation style; he practices the new changes in chunks.

He gives the same lecture, with the modifications, for another Grand Rounds presentation for a different department a few weeks later. Sherry is unable to attend, but is able to watch a video of the presentation and is able to give more suggestions regarding the transitions between his key take home points, allowing time for the audience to interact with his message, and pointers on the layouts and colors of his slides. Bob continues to practice on his own, adapting the changes suggested by Sherry, as well as the feedback he received from his Grand Rounds lectures.

By the time of the new speaker’s forum, Bob is feeling much more confident in his speaking ability. Prior to traveling to the forum, Bob meets with Sherry again to go over his lecture. She notes that he seems much more confident and that the modifications he has made to his presentation style have made him appear more engaging and warm. He gives the presentation at the forum and gets wonderful audience response afterwards. After the forum, Bob is approached by the organizer of an upcoming national conference. He is looking for new speakers for an afternoon session and offers Bob one of the spots. He tells Bob that presenting must be second nature to him — as he was impressed not only by his command of the content of his lecture, but also by his presentation style and effortless audience engagement.

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References


Reflection or reflective practice is a theory of knowledge acquisition predicated on the belief that learning occurs through deliberate and comprehensive thinking about a schema or activity, both during and after the performance of that activity. Motivation to Practice. Deliberate practice in medical education. Practice as maintenance. See also. Behavioral theory would argue that deliberate practice is facilitated by feedback from an expert that allows for successful approximation of the target performance. Feedback from an expert allows the learner to...