

## Extracts taken from:

**Bjork, E. L., & Bjork, R. A. (2011):**

### **Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning.**

#### Introduction to these extracts

There is a huge amount of science that supports fundamental changes in the way we approach education. Unfortunately, most of education is yet to embrace the more effective methods of teaching and learning that are suggested by this science.

The following extracts are from one particularly authoritative scientific source: for detailed explanations of the ideas covered, including video interviews with Professor Bjork himself, please see <http://bjorklab.psych.ucla.edu/research.html>.

#### Key points:

- We do not learn how we think we do.
- Learning activities that appear to be effective, often are not.
- We are poor at assessing our own learning.
- There are widely accepted, better ways of learning.

The extracts given below are reproduced with the kind permission of:

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**Selected extracts from Bjork, E. L., & Bjork, R. A. (2011):**

**‘Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning.’**

In M. A. Gernsbacher, R. W. Pew, L. M. Hough, & J. R. Pomerantz (Eds.),  
Psychology and the real world: Essays illustrating fundamental contributions to  
society (pp. 56-64). New York: Worth Publishers.

[http://bjorklab.psych.ucla.edu/pubs/EBjork\\_RBjork\\_2011.pdf](http://bjorklab.psych.ucla.edu/pubs/EBjork_RBjork_2011.pdf)

**Page 56 and 57**

As teachers—and learners—the two of us have had both a professional and personal interest in identifying the activities that make learning most effective and efficient. What we have discovered, broadly, across our careers in research, is that optimising learning and instruction often requires going against one’s intuitions,...

...

Somewhat surprisingly, the trials and errors of everyday living and learning do not seem to result in ... an appreciation of the activities that do and do not foster learning.

...

Conditions of learning that make performance improve rapidly often fail to support long-term retention and transfer, whereas conditions that create challenges and slow the rate of apparent learning often optimise long-term retention and transfer.

...

[Experiments have shown that] ...substantial improvements in performance across practice or training sessions can occur without significant learning ( taking place ) ... people ... become susceptible to misassessing whether learning has or has not occurred.

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...learners ... become susceptible to preferring poorer conditions of learning to better conditions of learning.

...these better conditions of learning ... include

varying the conditions of learning ... ;

interleaving instruction on separate topics...;

spacing ... study sessions on a given topic; and

using tests ... as study events.

...varying conditions of practice—even varying the environmental setting in which study sessions take place—can enhance recall on a later test. For example, studying the same material in two different rooms rather than twice in the same room leads to increased recall of that material.

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The benefits of spacing on long-term retention ... have been demonstrated for all manner of materials and tasks, types of learners (human and animal), and time scales; it is one of the most general and robust effects from across the entire history of experimental research on learning and memory.

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...when some skill or knowledge is maximally accessible from memory, little or no learning results from additional instruction or practice.

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In a world that is ever more complex and rapidly changing ... learning how to learn is the ultimate survival tool.

