Desirable Difficulties: If at First You Don't Succeed…You May Have Learned More than You Thought

by Jasmine Duran - August 26, 2014

https://thinkeracademy.com/desirable-difficulties/

We've all been there, faced with a question or task related to a topic we've previously learned, thinking "I know that I know this…why can't I think of the answer!?"

So why is it difficult to remember something we've previously learned?

Research by Elizabeth Bjork and Robert Bjork, at the University of California, Los Angeles examines this very phenomenon. They describe their work in, "Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning." It turns out the answer lies in how our memory works.

You can think of memory as having two functions related to learning. The first is an input function where some knowledge and skills that we want to learn must be placed into a storage vault. It takes hard work to get knowledge and skills into that storage vault, but once they are there, they will reside there for a very long time.

The second memory function is an output function. The output function reflects our ability to retrieve the knowledge and skills from the vault. Think of this as the passcode to the memory storage vault. You activate what is held in the storage vault in order to get it and use it. Retrieval is less stable than storage. It is also heavily influenced by conditions of learning. You will have a hard time retrieving information if you learn it one place and have to retrieve it in another. A delay in time also makes it tough. Forgetting is not necessarily the loss of information from the storage vault. Rather, it can be a failure in the ability to retrieve that information. Put another way, it is a weak relationship between the passcode and the knowledge and skill stored in the memory vault. Hence resulting in the situation, "I know that I know this…why can't I think of the answer!?"

How can we Become Better Learners?

For Bjork and Bjork, the key to learning for long term retention and transfer is to exercise retrieval. You need to find different ways to activate knowledge stored in your memory vault. Good study skills help you do this. It's like creating multiple passcodes for your memory vault.

Desirable Difficulties Help us Become Better Learners

According to the Bjorks, the well-known adage "don't be so hard on yourself" isn't good advice when it comes to maximizing learning. In fact, these researchers suggest that adding specific types of challenges to learning, which they call "desirable difficulties" can help us become better learners. These challenges essentially exercise the retrieval portion of memory. They create multiple avenues that can be used to activate and retrieve knowledge and skills. Practicing retrieval under challenging conditions also

solidifies the knowledge in the storage portion of memory. This helps you make sure it will be there when you need it in the future. The ultimate result is that you can retrieve information anywhere, anytime.

Desirable difficulties create a performance conundrum. In the short term, your performance on the learning task suffers. It can seem like you didn't learn. It's harder to create multiple passcodes to your knowledge vault. However, later on, when it comes time to demonstrate your knowledge and skill, you will perform much better if you use desirable difficulties than if you don't. So, how can you introduce learning challenges?

Four Desirable Difficulties for Better Learning

1. Mix it up: Vary the Conditions of Practice

Practicing under the same conditions leads to rigid learning and brittle performance. If you only ever practice driving in perfect weather in the daytime, you won't have the skills for driving at night in stormy weather.

Varying the conditions of practice can be as simple as practicing a golf swing at different distances, or studying materials alone and then in a group setting. Changing things up helps you to elaborate and hone your knowledge and skills to use them more flexibly. You'll be able to transfer your learning to new situations.

2. Space it out: Don't Cram for an Exam

Studying in one large cram session can be tempting. But it isn't an optimal strategy for remembering over the long term. Instead, having multiple practice or study sessions spaced in time allows you to focus on learning smaller portions. Focus on quality of understanding rather than the quantity of information you cover during the session. Each study session serves as a building block for the next session. In that next session, think about what you covered in past study sessions. Linking information in this way leads to deeper understanding. It's a better way to study, one we stress in our study skills course. You build new avenues that support activation and access to that knowledge in the future.

3. Alternate it: Interleave Study Topics and Tasks

You often have to practice or study different things. An intuitive way to tackle this situation is to do one thing at a time. However, interleaving the tasks can help you perform better in the long term. This works whether you are practicing different golf swings, or learning how to identify the style of different musical composers. Switching between tasks requires you to process information multiple times and in many ways. Yes, it's harder to practice this way. But you learn better. It's a desirable difficulty.

4. Generate it: Test Yourself

Typical study strategies are passive. You may reread a book chapter to gauge how well you have mastered the material. Passive learning strategies give you a sense of familiarity. You may confuse familiarity with learning something. You can use active learning strategies to improve learning. A good active learning strategy is to test yourself while you are learning. Testing yourself will require you to

generate material you think you learned. You will have a better sense of what you have learned. Generating an explanation or description creates multiple paths for relating and remembering information. Thus enhancing your ability to understand and recall that information in the future.

You may not initially feel like you are learning if you incorporate desirable difficulties into your learning process. The extra effort will be worth it. You will learn more than you thought.

Bjork, E. L., & Bjork, R. A. (2011). Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning. *Psychology and the real world: Essays illustrating fundamental contributions to society*, 56-64.

Image Credit: Teresa

Retrieved: 01-02-2019
Updated: 01-01-2019
Published: 08-26-2014
thinkeracademy.com