

Daniel Willingham

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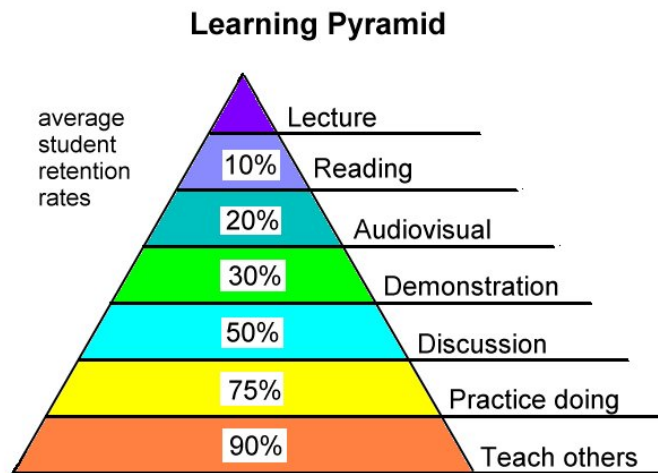
Daniel Willingham:
Science And Education
Blog

Cone of learning or cone of shame?

02/25/2013

5 Comments

A math teacher and Twitter friend from Scotland [asked me](#) about about this figure.



Source: National Training Laboratories, Bethel, Maine

I'm sure you've seen a figure like this. It is variously called the "learning pyramid," the "cone of learning," "the cone of experience," and others. It's often attributed to the National Training Laboratory, or to educator Edgar Dale.

You won't be surprised to learn that there are different versions out there with different percentages and some minor variations in the ordering of ac

Certainly, some mental activities are better for learning than others. And the ordering offered here doesn't seem *crazy*. Most people who have taught agree that long-term contemplation of how to help others understand complicated ideas is a marvelous way to improve one's own understanding of those ideas--certainly better than just reading them--although the estimate of 10% retention of what one reads seems kind of low, doesn't it?

If you enter "cone of experience" in [Google scholar](#) the first page offers a

few papers that critique the idea, e.g., [this one](#) and [this one](#), but you'll also see papers that cite it as if it's reliable.

It's not.

So many variables affect memory retrieval, that you can't assign specific percentages of recall without specifying many more of them:

- **what material is recalled** (gazing out the window of a car is an audiovisual experience just like watching an action movie, but your memory for these two audiovisual experiences will not be equivalent)
- **the age of the subjects**
- **the delay between study and test** (obviously, the percent recalled usually drops with delay)
- **what were subjects instructed to do** as they read, demonstrated, taught, etc. (you can boost memory considerably for a reading task by asking subjects to summarize as they read)
- **how was memory tested** (percent recalled is almost always much higher for recognition tests than recall).
- **what subjects know about the to-be-remembered material** (if you already know something about the subject, memory will be much better).

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Purpose

The goal of this blog is to provide pointers to scientific findings that are applicable to education that I think ought to receive more attention.

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This is just an off-the-top-of-my-head list of factors that affect memory retrieval. They not only make it clear that the percentages suggested by the cone can't be counted on, but that the ordering of the activities could shift, depending on the specifics.

The cone of learning may not be reliable, but that doesn't mean that memory researchers have nothing to offer educators. For example, [monograph](#) published in January offers an extensive review of the experimental research on different study techniques. If you prefer something briefer, I'm ready to stand by the one-sentence summary I suggested in [Why Don't Students Like School?](#): It's usually a good bet to try to think about material at study in the same way that you anticipate that you will need to think about it later.

And while I'm flacking my books I'll mention that [When Can you Trust the Experts](#) was written to help you evaluate the research basis of educational claims, cone-shaped or otherwise.

Comments

Gerald Aungst

02/25/2013 8:14am

Your list is excellent, and it reminds me not to take things like this at face value just because it's frequently shared. It also occurs to me, though, that a major problem with this Cone is the implicit assumption that all we need to worry about in learning is recall and retention. Just because you remember something doesn't mean you can use it for something productive or valuable.

Chuck H.

02/25/2013 8:18am

This cone is such a frustration. You can read some of the history of it here: http://www.willatworklearning.com/2006/05/people_remember.html

David Wees

02/25/2013 11:58am

I agree with you, I have also searched for a reference for this cone of remembering (I hesitate to call it a cone of learning, for the reason suggested by Gerald), and have never found it. I'm certain it is not based on any useful research.

That being said, one is even more likely to remember something if one experiences it through a variety of modes, and even more likely to be able to use it if you experience it in a variety of different contexts. Whenever I see this cone, I am reminded of some of the possible modes for learning.

Bill

02/26/2013 5:04pm

The Cone of Experience is a bundle of bad ideas about teaching and learning. One version includes the idea that the different levels in the cone correspond to progressively more "active" learning, e.g., reading = passive (bad) and doing a presentation = active (good). I took a stab at debunking this particular idea here, <https://sites.google.com/a/uwfax.edu/exploring-how-students-learn/>.

Will Fitzhugh

03/06/2013 8:29am

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Victor Henningsen, former head of History at Andover, said that students don't remember the questions on the AP exam, but they remember their research papers, and so does he.

Comments are closed.