

Learning on Steroids:

Notes Compression



by Scott Young

Notes Compression

Notes compression is a good review technique. I don't use it for every course, but for courses with a large volume of material, it can be helpful to gain synthesis of the major ideas.

This is also one of the few “studying” tactics I'll mention through this program. As I'm a big follower of the “learn it once” principle, studying should be replaced by learning. If you learn something effectively the first time the need for studying goes down.

That's simply the ideal. There will be times, particularly when your mastery of holistic learning is lower, that you will still need to study. That's fine.

However, you should be getting the most out of your studying time. Too many students consider “studying” to be rereading

notes while they have Facebook on or the television blaring. No surprise that many students are disappointed with their grades at the end of a semester.

What is Notes Compression?

Compressing your notes is a method to try to synthesize large chunks of ideas. You can use it within a particular topic of a course, or with the entire course itself to get a broad overview.

The method is actually fairly simple: for any course or set of topics, take out one large piece of white paper. You can do a more extensive compression with a few sheets stapled together to form a broader area, but I usually stick with just one.

Notes Compression

The goal is to, on this page, transcribe all of the major ideas of the course or topic. You are trying to map out all of the major ideas, formulas, theories and expressions all into one page.

I would say this approach is very similar to mindmapping, however it doesn't require central organization, I tend to interlink ideas and not worry if they all connect to the same root.

Notes compression accomplishes three things:

1. It forces you to simplify ideas.

Simplification is often underrated. We like detail and complexity, but there are advantages in being able to reduce a broad understanding to it's fundamentals. When you simplify you're also reorganizing the information. Reorganization creates new connections and understanding.

Notes Compression

2. It helps you see all the content in one place.

With hundreds of pages of notes and ideas, it can often be difficult to see the breadth of what was covered. This gives you a birds-eye view of what you studied and allows you to focus down again on detailed areas if they give you difficulty.

3. It helps you make broad, macro connections within a topic.

It can be hard to see all of the connections between ideas when you study on a detailed level. However, when you zoom out, it is easier to see how the introductory chapter relates to the thirteenth chapter.

How to Create a Notes Compression

Get your piece of white paper and a fine pen or mechanical pencil. Then get your lecture notes or textbook (whichever forms the bulk of testable information) and go through them. I usually start in a corner patch of the page and write in small print any ideas.

As with mindmapping, you aren't trying to linearly write out the same notes. You want to make diagrams of the ideas, drawing arrows between them, using bullets and shortened versions of the information. Every word or two should be a summary, not an exhaustive list.

Draw diagrams, pictures, arrows and memory cues to link the different ideas together. I find a good notes compression takes me 30-60 minutes and results in a densely written page showing the final outline of the course.

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Here part of an old notes compression I did a few years ago:

STATS IN ONE PAGE

variables → **Qualitative**
 nominal
 categorical

continuous → **Quantitative**
 actual

GRAPHIC HISTOGRAMS
 k = # classes
 $2^k \approx n$
 shape? center? outliers → IQR

Skewed
 right tail

Inter-Quartile Range
 low, med, high
 all obs

Skewness summary
 [Box plot]

Skewed
 right tail

Skewed
 right tail

Skewed
 right tail

Mean is resistant, not resistant median is.

380

Variance = $\frac{\sum (x_i - \bar{x})^2}{(n-1)}$
 $s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$

$Z_i = \frac{x_i - \bar{x}}{s}$

Normal quantile plot
 normal
 Z-score based on percentile found
 values of distribution

Normal
 95
 77.7

VARS
 y = response
 x = explanatory

Correlation $r = \frac{\sum (y_i - \bar{y})(x_i - \bar{x})}{n-1}$

r^2 is % of distribution explained by regression line

$r^2 = 1$
 $r^2 = .9$

residual = $\hat{y} - y$
 residual plots

Least Squares Regression

PRODUCING DATA

Principles: randomize, control, replicate → avoid bias

Sample → Observational Studies, Surveys

Experiment → units/subjects → treatments → randomize → Block Design

Matched Pairs

Block Design
 units

Matched Pairs

Approx Binomial of Normal
 if $np \geq 10$ & $n \leq 100$

$\mu = n \cdot p$
 $\sigma = \sqrt{n \cdot p \cdot (1-p)}$

Normal
 $\bar{x} \approx \mu$
 $s_{\bar{x}} \approx \frac{\sigma}{\sqrt{n}}$

Binomial
 $(n, k) = {}_n C_k = \frac{n!}{k!(n-k)!}$

Binomial
 P, \hat{P}

Binomial
 $A=1, P=1/2$

What To Do When You've Finished

Once you've finished creating the compression of your notes, you will want to use it as a template for further studying/learning.

You may discover that you didn't really understand a topic that you covered. This can help you identify what areas you need to practice other techniques on in order to understand them better.

The compression can also help remind you of subjects you had forgotten. When I've done this with law courses, I found that it helped remind me of details I forgot. For courses where the ideas aren't always interrelated, this compression can help catch details which would otherwise slip through the cracks.

How to Implement Your Notes Compression

This tactic isn't best served as a thirty day trial as it is fairly easy to implement and you will only need to use it ever few weeks. However, you can start implementing it today on some of your subjects.

Start by taking your existing notes from one subject and practicing a compression on it. If you notice there are misunderstood or forgotten items when reviewing your notes to create the compression, you can work on using other holistic techniques to help remember them better.

If you practice semi-regular compressions of your notes, that can also give you a good indication of your progress on a subject.

Notes Compression

Knowing your progress can help you avoid the inevitable exam dread of being unsure whether you know enough to get a good grade on your test.

Good luck with this technique, and I'll see you from the other side!