
MATH FORUM REFLECTIVE ESSAY

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Prompt. Write a 750-1000 word reflective essay about your growth as a speaker in Math Forum. Successful essays will incorporate specific examples of lessons learned, together with accompanying allusions to your own talks as evidence. Readers of your essay should easily be able to sense the extent to which you have been engaged in Math Forum.

Please note that the audience for your essay is primarily your instructor, but every member of the mathematics faculty should be able to read (and enjoy) your essay. Finally, to submit your essay, please upload a PDF copy of your essay to your drop box, and please name your file lastname-essay.pdf.

Response.

I've really enjoyed my time in Math Forum. I've learned a lot about public speaking, managing my verbal/physical tics, and presenting technical information in a non-interactive setting. Honestly, I wish there were a sequel course — I'd be really excited to try my hand at a full-hour lecture format, or something like it. I guess I could always try to start making YouTube videos or something... but yeah, anyways, here are some of my big takeaways from the class:

- 1) It is much harder for me to present a non-technical topic than it is for me to present something like a theorem.
- 2) Giving a talk is a vastly different experience from presenting material in an interactive setting (e.g. tutoring). In the latter, you can sometimes rely on your audience to signal where you need to slow down, what isn't quite clear, and so on. Because talks are more static and non-interactive, you have to put in a *lot* of work ahead-of-time to identify places where your audience could get lost. As such,
- 3) Knowing how to explain a topic well is *not* the same thing as knowing how to give a good presentation on it. The latter requires a lot more work, including (but not limited to)
 - (a) doing extensive meta-analysis of your own understanding of the subject,
 - (b) compressing that understanding into an easily-digestible model that you want to communicate to your audience, and
 - (c) finding ways to efficiently translate that model to words, pictures, and any other medium of communication.

I'll offer some brief thoughts about the first two points, and focus the remainder of this essay on the third.

1 Why is non-technical exposition harder?

I think that one of the biggest challenges to non-technical exposition is that things are a lot less discretized. This makes it easy to continue packing more and more stuff into your talk, so that the audience has an easier time interpolating the underlying surface.

Idea: concepts as n -surfaces. Educator: necessarily gives a few key points to allow interpolation. Sampling rate ought to be proportional to how furrowed the surface is, maybe?

2 Why is talk different

3 How to make a talk accessible and/or engaging

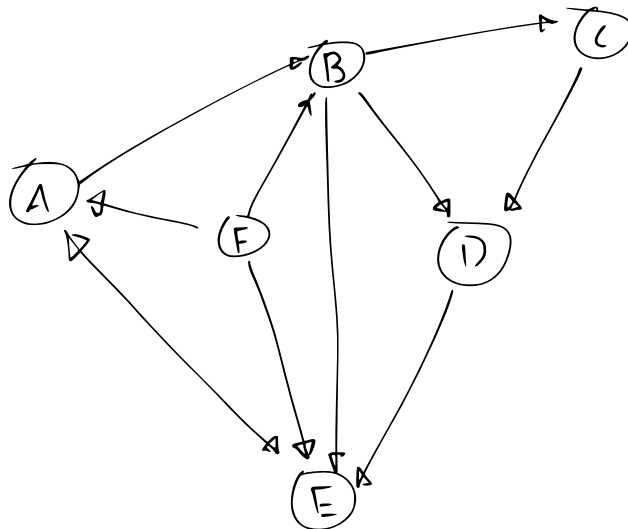


Figure 1: Example of a conceptual digraph

Key: everything should be justified and motivated. Problem should always seem like path of least resistance has been taken. Need to *justify* to the audience why we've done stuff.

The key in a good talk is to focus on polishing the intro and conclusion. The technical details are certainly important, but provided the audience has a good understanding of the big-picture, they'll ultimately be secondary — with a large-scale perspective, audience can reacquire whatever knowledge they need at some point in the future.

Most audiences are surprisingly capable of grappling with abstract technical material, provided it's *interesting*. This is what you have to focus on. Motivate everything, make everything feel gratifying and sensible, and so on.

Problem is *not* quite “people aren't great at abstract reasoning.” People do plenty of abstract reasoning — it's a very human thing, in fact. The problem is that abstraction is often *uninteresting* to people. Evolutionarily, this would make sense, maybe. I really am not an evolutionary psychologist, but I imagine that if you were part of a hunter-gatherer society, it wouldn't be beneficial to get caught up in ruminations about the universe.

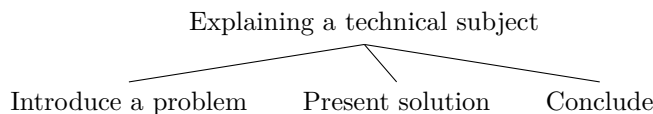


Figure 2: Summary of

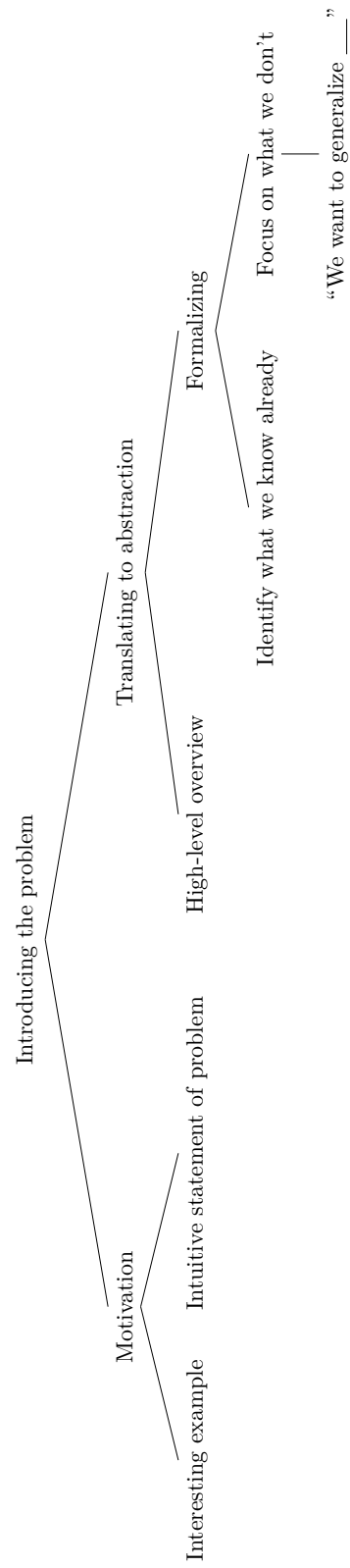


Figure 3: Introducing a technical subject

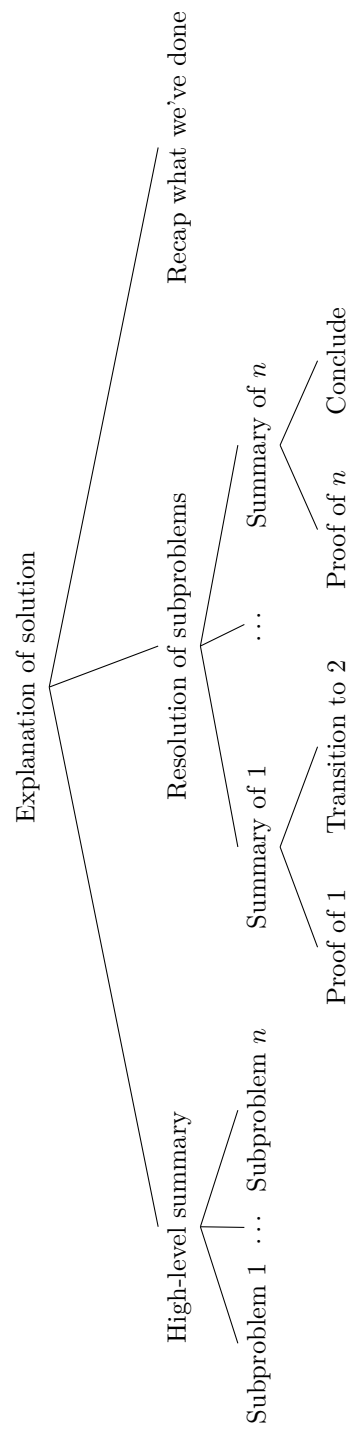


Figure 4: Explaining the solution

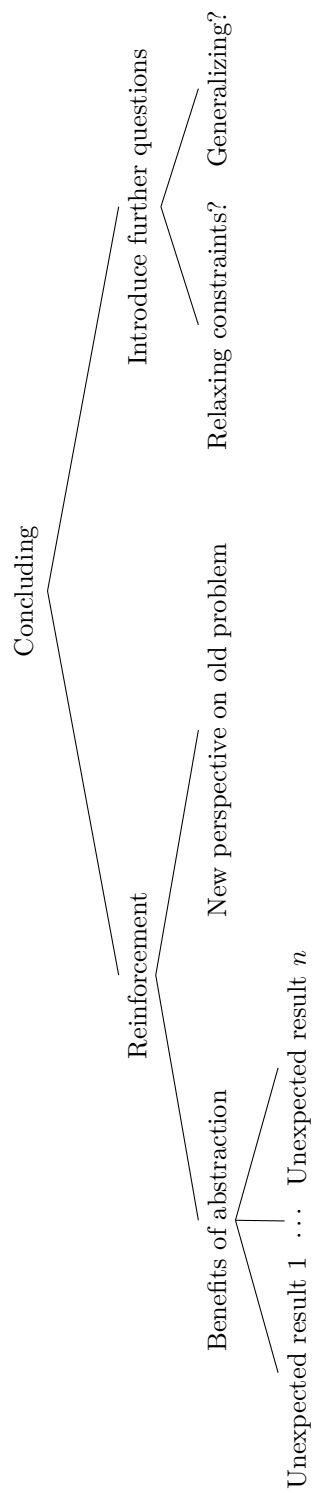


Figure 5: Wrapping things up

