

Knowing What it Means to “Know Your Audience”

Aaron Luttmann and Rachel Schwell

About four years ago a graduate student was asked to give a 20 minute presentation at the Montana Academy of Sciences annual meeting describing his research on using partial differential equations to model a botanical process. The student thought to himself, “The audience will consist of graduate students and faculty from a wide range of sciences, who aren’t necessarily familiar with PDE modeling or the numerical issues involved. I’ll make sure to spend plenty of time going through the numerical details of my computation, so the audience will understand the computational subtleties.”

This student has taken an unfortunate — but common — wrong turn. He knew who would be in the audience, assessed their mathematical background correctly, and *still failed them*. (For that, the first author apologizes to everyone who had the misfortune of attending his talk.)

The talk could have been built around the big picture of the interplay among the biology, mathematics, and computer science, but instead it focused on the details of numerical methods for PDEs, which were certainly not interesting to those listeners. It wasn’t a “bad talk,” but it was a bad talk *for that audience*. This sort of mistake is a source of many failed presentations. How do we express to this poor graduate student where he has gone wrong?

“Knowing your audience” is a two-sided coin. The first (and obvious) part is identifying the actual audience and their mathematical background. The second, which our graduate student skipped completely, is *formulating a story that is captivating for those listeners*. Rather than asking, “What do I find interesting about my topic?” the presenter should instead ask, “What will my audience find interesting about this topic?”

While this might seem like an implicit part of knowing the audience, this shift of focus actually has deeper and subtler implications. For example, it was natural for our graduate student to think that a project comprised of computation should lead to a talk comprised of computation. We are naturally eager to share the results on

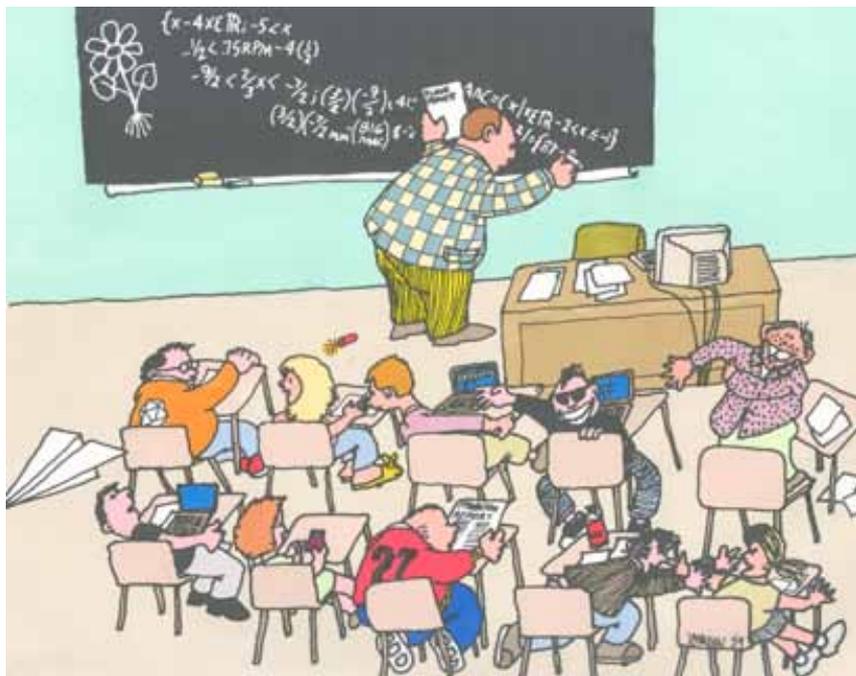


Illustration by John Johnson

which we worked so hard and of which we’re so proud, but this often leads us to focus on mathematical minutiae. A more successful line of attack is to let go of the details, in favor of a narrative that is substantive but still enjoyable for the audience.

If a speaker can go wrong even knowing the potential pitfalls, how should one go about designing a technical talk? It is tempting to start with a research paper and simply “cut” the parts that might not be interesting to the audience. While this technique can work, it is difficult to find the balance between cutting too much and not cutting enough.

A better approach is to formulate the story *first*, and write a one-sentence, non-technical description of it. How to know if the story chosen is appropriate? Find a colleague or classmate (or two) and ask her to read your sentence. If she understands the sentence and thinks it sounds interesting, you’ve made a good start. If she can’t understand your one-sentence description, you should try to find a different story to tell.

How specifically can we develop the skills for crafting successful mathematical presentations? One of the best ways to improve is to actually give them. Mathematicians at all levels, from undergraduate students to senior faculty, have many opportunities to share their work with the mathemati-

cal community. Department seminars, colloquia, and math club meetings are great forums for this. Beyond our own campuses, regional meetings like MAA section meetings and national conferences like MathFest or the Joint Mathematics Meetings make terrific venues as well. Take advantage of these opportunities; there is no substitute for practice when it comes to improving presentation skills.

Workshops are another highly effective setting in which to hone these skills. The Seaway and Northeast sections of the MAA held workshops this year for undergraduate students on the nuts and bolts of constructing a mathematical presentation for a general audience. Similar workshops can be run by other MAA sections, regional associations of colleges and universities, or undergraduate research conferences. Programs of this type can be developed for undergraduate students, graduate students, or even faculty (especially through section NExT programs), and they serve the dual purpose of teaching practical skills and inviting mathematicians to become active in the professional community.

With this in mind, the MAA Committee on Graduate Students is hosting “What’s the Story? A Graduate Student Workshop on Formulating an Effective Mathematical Presentation” at MathFest 2009 (see <http://www.maa.org/mathfest/students.cfm>). Our focus will be on the art of crafting a research-based presentation suitable for a general

mathematics or undergraduate audience. The workshop will consist of team-based, hands-on activities designed to help students formulate an appropriate story, construct a coherent outline, and determine essential details. The students will also be directed to further reference materials to assist with other aspects of creating and delivering a presentation, such as public speaking and formatting slides. This workshop is targeted at students in the mathematical sciences early in their graduate school careers, and we encourage graduate students and faculty with questions about it to contact us. 🍎

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