

Talking Tech: Explaining Technical Topics to a Non-Technical Audience

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Teaching technical topics is difficult. Teaching technical topics to those who are not technically inclined is extremely difficult. That's why I feel blessed to have learned how to do it well from a teacher as gifted as Anne Grodzins Lipow.

When Anne first persuaded me to conquer my greatest fear by speaking in front of an audience, she was the Director of Library Education for The Library of the University of California, Berkeley. It was the late 1980s, and I had just acquired my first professional position. Beginning with a short class on how to connect to the Library catalog via a modem (at the glacial speed of 300-1200 bits per second), I learned from Anne how to teach technical topics, how to create effective handouts, and how to prompt my audience for questions as if I actually expected them to ask. Eventually I was teaching all-day workshops and giving keynote addresses to conferences.

What follows is what I learned from Anne, or from others, or from my own experience, about how to effectively teach technical topics to those to whom technology is unfamiliar or even undesirable.

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Know Your Audience

Knowing to whom you are speaking is of the utmost importance. But this goes double for teaching technical topics. If you assume too much about your audience or select the wrong technical level to address, the results can be disastrous. You can actually leave your audience not only just as ignorant about your topic as when you started, but also much less likely to ever attempt learning the topic again. Once burned, twice shy.

But in reality it is more nuanced than that. Typically your audience will vary widely in their technical knowledge and level of comfort with technical topics. It's your job to find the middle ground between the inevitable edge cases. You want to aim for evaluations where a few fault you for being too technical, a few for being not technical enough, and the majority stating that it was exactly what they needed. This is the "sweet spot" for any technical presentation.

Select the Appropriate Scope

Once you have a sense of your audience, this will provide guidance about what to cover and what not. Selecting the appropriate scope is essential, since it can make or break your ability to put across your topic in an effective way. Scoped too broad and your session will be too diffuse and/or too overwhelming; scoped too narrowly and you run the risk of getting bogged down in detail or boring your audience with too little of substance.

For workshops, which tend to be longer, you may also want to prepare portions that can be either added or subtracted depending on how things are going. If you find yourself spending a lot of time covering basic material, you should know what advanced topic you can cut. Similarly, if find your audience breezes through the basics, you may want to have something ready you can easily add.

Simplify

What you don't say is more important than what you do. You must fight the natural tendency to impress your audience with your thorough knowledge. Rather, it is better to use your knowledge to decide what is most important for them to know — and therefore, what is best ignored or put off until later.

This is the single best skill of a teacher or trainer — appropriate staging of complexity.

When I first began teaching the Internet, I felt it necessary to explain where the history of the Internet. It took me several years to understand that it didn't help them in the least to *use* it, and therefore was superfluous. I should have abandoned it much sooner, and used the additional time to teach something that mattered.

A good question to ask yourself about any component of your curriculum is "Will this help them do something useful?" If it won't, it's likely not worth talking about.

Summarize

Encarta defines summarize as "to make or give a shortened version of something that has been said or written, stating its main points." Your audience will in most cases not need to know every little detail, unless the technical topic you are teaching is software coding or some specific procedure. By summarizing a topic, you allow your students to only pay attention to the most important points instead of a blizzard of detail.

Cultivate the Right Attitude

Assume that the people you are teaching are not stupid. Also do not expect them to have any particular set of skills or knowledge that is a logical precursor to what you are about to teach. More importantly, you must not disdain them for their lack of interest in what interests you. Although you may know much more than they do about a certain technical topic, they most likely know more than you do about a number of other things. Be humble. Your knowledge is probably no more important than theirs – it just supports a different goal. Anne Lipow honored all of her students by respecting them as fellow human beings and giving their questions, comments, and problems her undivided attention.

Empathize

There are many qualities that made Anne Lipow such a gifted teacher, but an essential quality is that she was never far away from the people she was

teaching. She knew what they were thinking, where they would stumble, and what would most puzzle them, because she had likely tread that very same ground just before. Her empathy with students came naturally, from learning her subject by weathering the same bumps and jostles as she was now expecting her students to overcome.

It can help sometimes to not be too far ahead of those you seek to teach. In my early days of teaching technology, I distinctly remember the discomfort of being only one step ahead of those I was teaching. I lived in constant fear of being unmasked as an impostor who barely knew his subject. In retrospect, being that near to my students had a silver lining – I knew in rather vivid detail what they must be thinking and experiencing as I stood before them trying to help them make sense of what they were hearing.

Admit Your Ignorance

When you are only one step ahead of your audience, it does not take too many questions before your expertise is exhausted. At this point, do not make up an answer. You do not need to prop up a façade of expertise. Rather, it is better to be honest about the limits of your knowledge if for no other reason than to make your students feel more comfortable with the idea that even your knowledge has limits.

It is far better to admit you don't know the answer, but offer to find out the answer and get back to them later. Or, if you know of a likely source for the answer, you can also provide information on where to go to get the answer. But making up the answer will only backfire when they discover that you didn't know what you were talking about.

Deliver in Multiple Modes

Some of us learn best by reading, some by attending lectures, and many of us by doing. The point is to deliver your content in a variety of ways and allow your students to focus on the mode that is the most meaningful to them.

I recall a technique John Ober (also a friend of Anne's) used when teaching the concept of Internet packet switching. After explaining the topic in typical lecture format, he then asked us all to stand up and participate in a packet switching exercise. We all represented packets, with one group of us arranged in a line to represent a "message." He then sent us off in different

directions, but all headed to the same place. When we arrived in the other part of the classroom we reassembled in the appropriate order, thus “delivering” our “message”. Because of this exercise, I will never forget how packet switching works.

Repeat

Repetition is an oft-used teaching technique that is perhaps even more important when teaching technical topics to those to whom technical knowledge does not come naturally. The best way to repeat content is by presenting it from a different perspective or in a different way. It can also be useful to summarize what you have covered at the end of the presentation or at logical intervals along the way.

Make Accommodations

Any good teacher will arrive prepared. But a truly excellent one will be prepared to toss out all or part of what they prepared if they are confronted with a much different situation than they expected. If your assumptions regarding your audience are drastically wrong, for example, you may need to change what you had planned to do. These situations will test your ability as a teacher and your knowledge of the subject, but staying with what you had originally planned would be worse.

Also, avoid the common error of asking questions about your audience and then forging ahead no matter what the answers are. For example, I’ve seen many teachers ask if the audience knows what a particular term means. We all know that no matter how many of us raise their hands, if even one person doesn’t they will still explain the term to us. So skip the useless exercise and get on with it.

Provide Opportunities to Participate

In general, audience participation is a good thing and should be a part of nearly any presentation. What you’re teaching is more likely to be retained when your students are actively engaged. John Ober’s packet switching exercise is one example. You will need to consider what is appropriate given your situation and topic.

Roll With the Punches

Any experienced speaker has had one disaster or another visited upon them. One of my favorite disasters happened when teaching a workshop on digitizing to about twenty librarians. We had a full array of technology in the front of the room – computers, scanners, a computer projector and an overhead projector.

The problem began when the computer I was using for the presentation began acting up. I had to abandon it and fall back on the overhead transparencies I had prepared as a backup (this was when computer projection was still new and having a backup plan was still necessary). Barely skipping a beat, I slapped the overhead transparency on the projector and continued. Then all of the equipment shutdown. We had blown a fuse. Again, barely skipping a beat, I asked them to follow along on their printouts of the slides. There was no anguish or panic, we just continued however we could and laughed it off. What might have been much more damaging to the workshop was defused into a minor incident simply by not allowing it to impede our progress.

Ask for Questions Like You Really Mean It

One of the most important lessons I learned from Anne Lipow was how to ask for questions. Nearly every lecturer I have ever witnessed would say something like “Are there any questions?”, pause briefly, then charge ahead. This method of asking for questions tends to prevent people from asking questions in two main ways: 1) the question is asked in such a way that the audience gets the impression that questions are not expected; and 2) not enough time is allowed for people to realize they have a question, formulate it in a way that they feel will not embarrass themselves, and finally gather the courage to raise their hand.

These problems can be overcome by first phrasing the question properly, as “What questions do you have?”, which tells the audience that you *know* they have questions. Then, even more importantly, you wait. You wait long enough to make everyone uncomfortable, at which point someone will likely have formulated a question and found the courage to ask it. If not, then you will be certain that there are no questions that anyone wanted to ask.

Be Enthusiastic

I will always remember Anne's enthusiasm. You could not be around Anne for long before being caught up in her excitement and enthusiasm for whatever topic had come to her attention. She inspired you to want to know about the topic because she herself was so enthusiastic. Like a smile, enthusiasm is contagious. Don't be dishonest, but if you are interested, engaged, and enthusiastic about the topic you're teaching, let it show. Much of the time you will end up with interested, engaged, and enthusiastic students no matter what you're teaching.

Be Authentic

One of Anne's finest attributes, in my estimation, was her purity of purpose. How she presented herself was exactly who she was. She did not prevaricate, or lie, or stab you in the back. She was direct but polite. She would display enthusiasm or confusion or dismay, and you knew that was exactly how she felt. Speaking before a group of people is a privilege that you should treat as such. They deserve knowing what you think in an honest and direct manner.

Have Fun!

No one learns very much in a dull environment. By making learning fun, you are much more likely to engage your students and therefore increase their learning. Your enjoyment of the topic can also be contagious, demonstrating to your audience that the topic can indeed be interesting and fun.

Humor is an important part of learning and of life. I always try to begin any talk or workshop with a joke that is appropriate to the time and place. Jokes that are mildly denigrating to you are even better. Since you are in the position of an "expert" it can help your audience to see you as having the same human frailties that pester them.

I have had many mentors in my career, but no one has been more important than Anne. Besides many of her techniques for teaching technical topics well, I learned valuable human traits such as humility and respect for those who lack the technical skills I possess. I saw her treat everyone as she

would wish to be treated, I witnessed her confessing her ignorance to a roomful of students rather than make up an answer, and I heard her kindly admonish me to ask for questions as if I expected them. I hear her still, as does anyone I teach.