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AUTHOR Wallisch, Bill
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ABSTRACT

Technical writing teachers at the U.S. Air Force Academy enhance student motivation by bringing real Air Force writing situations into the classroom through short videotapes which allow students to see how scientists and engineers cope with report writing in their daily work. Also, a special English honors course, which is part of the "Blue Tube" program, teaches technical writing within a special television production context. (Author/CMV)

USING TELEVISION TECHNOLOGY TO TEACH TECHNICAL WRITING

Lt Colonel (Dr.) Bill Wallisch

Using television technology, technical writing teachers at the U.S. Air Force Academy bring real Air Force writing situations into the classroom. Short tapes allow students to see scientists and engineers cope with report writing in their daily work. Likewise, students get a turn at the cameras in a special honors course. "Blue Tube" teaches technical writing within a special TV production context and keeps all students informed on Academy news.

Lt Colonel (Dr.) Bill Wallisch

210 Arequa Ridge Drive
Colorado Springs, CO 80919

U.S. Air Force Academy.
Assistant Professor of English

B.A. in English, Allegheny College, 1962; M.A. in Speech Communication, University of Oklahoma, 1973; Ed.D. in Higher Education, University of Southern California, 1977.

I'd like to tell you about two ways I put the technology of television to work in the technical writing classrooms of the United States Air Force Academy. In the first case I used television to bring specific, real life writing situations to the students. In the second, I actually put students into the television environment. Perhaps these two case studies will help you get something going of your own. As you'll soon see, it isn't hard at all.

Since the Air Force is an "industry" that has its own college, I thought I'd capitalize on that unique situation. Our students have jobs waiting for them in that parent "industry." Thus, it's possible to track down real people in the Air Force--working scientists and engineers--who work in the places our graduates will find themselves in. With cameras running, I peeked into that laboratory or engineering unit and asked those real people about their professional technical writing duties. All too often our cadets will say, "Sir, I don't need this course; I'm not going to have to write this way in the real Air Force!" These tapes are my answer to that.

So, I spent an entire summer break visiting bases throughout the country, running the cameras in the labs and on the flightlines. What evolved was a series of short videotapes now used in the Academy's English 330, technical writing course, required for all science and engineering majors. Each is geared to a specific objective and learning outcome. But before I discuss hardware

and technique, I'd like to describe the kinds of people I found and the messages they had for those specific lesson objectives.

For example, I interviewed an Air Force civilian who was a computer expert. He had a masters in electrical engineering, and right off the bat, this wakes up the "double E" and computer types in the class. In this tape he demonstrates a highly experimental communications computer and even has it play a selection of J.S. Bach over its tone components.

A "talking head" alone won't do the job. You've got to take advantage of television's great visual potential. In this one I stood a credible subject in front of a gee-whiz piece of equipment--and then slipped on the message. And the message was that even though he did a lot of neat things, everything in the lab eventually ends up in a technical report that must be clear, well written, and follows a prescribed format.

Even though the instructor in the classroom makes this very point, it's "more believed" if an expert says it on the TV screen. Most of us tech writing teachers don't have scientific degrees; it helps if the scientist supports our classroom massage. I've found that these tapes help younger instructors who might need a boost now and then.

Another tape was made in front of two B-1 bombers in a hanger at Edwards Air Force Base, California. In this one a Rockwell engineer points to the big birds in the background and tells the audience that "The weight of this airplane is exceeded only by the amount

of paperwork we engineers produce." He goes on to explain that his pet peeve is the overuse of jargon, technical terms and acronyms. He points to parts on the bomber and reads out the acronym given it in a standardized dictionary produced by his company.

This is all done in a delightfully humorous way, as he says things like, "Why don't they just call it the in-flight refueling door?" At the end of the tape he looks into the camera and tells the cadets that there's no substitute for clear writing, that engineers use enough terms and acronyms as it is. The successful engineer, he says, learns how to use smaller words when he can and cuts through verbage. He stongly suggests that good technical communication is a prerequisite for success.

Then there is a tape that motivates and keeps students' attention. They respect this engineer and they know he must be pretty good to be working on such a big project. Whether or not they know it, they also got the introduction to the lesson dealing with jargon, overuse of specialized terms, and acronyms.

A lot of our students want to fly airplanes, design them, or just be around them. Thus, there's nothing in the world that'll excite a young Air Force Academy cadet more than the sight of a hot fighter airplane like the F-15. With that bird in the background, and the sights and sounds of the flightline all around, the very first tape we use in the course has a young captain telling about his research project: see what happens to the person in the back seat of an F-15

when the canopy blows. Wow! Most everyone in class would trade eyeteeth for that job.

He tells them that like every scientist he was given a problem to solve. But he quickly adds that he isn't done until he performs the rhetorical task: write a report on the findings. And while actual scenes of flying the bird without a canopy flash across the screen, he describes the report to the audience. This one really keeps them glued to the set.

We use this for the kickoff because this young officer has it all. He's a graduate of the Academy; he's got a Ph.D. in physiology; and he's doing tests on the hottest thing going in the air. And, he's got reports to write! As a matter of fact, we pass around copies of that very report after the tape ends. Both the tape and the report get the students into the subject at hand. It's a nice device and it sucks them in before they know what happened.

In tape after tape we focus on a particular aspect of technical writing and then match it with testimony provided by someone who has that problem in a real life situation. We like to change the setting and the subject since these young people will be working with a variety of people. Thus, we try to use both civilians and military, officer and enlisted, men and women for the expert opinion.

And we use both positive and negative examples. For instance, what happens if the engineer, the researcher, the scientist do not communicate? Often lots of hard work is wasted because the people who make the final decisions simply didn't understand the findings.

To illustrate this point we play the tape of a young lieutenant who learned the hard way. As an Air Force mathematician, she was a part of a research team that gathered data for more than a year on a certain phase of flight training. When they had completed the scientific task, they were convinced their findings would help cut back some of the time needed to train pilots. With great hopes they wrote a report and then put all of that into a lengthy slide briefing.

To the team's dismay, they were turned down. And our lieutenant tells her TV student audience that she's convinced the idea failed because both the report and the briefing were too technical for the audience. Terms were not defined; too many acronyms were used; and the presentation of the data in detailed graphs, tables, and charts was far too complicated for the non-technical audience. We use this tape to demonstrate the wisdom of keeping visual data--any data--simple. It says a lot about audience analysis, too.

And since we cover formal briefings in our course and actually have out tech writing students give a briefing, I've included a few tapes on that subject as well. In two of these, I interviewed officers who have very responsible briefing positions. These briefing officers not only present daily updates to generals but also speak to visiting foreign dignitaries. On the tapes they explain the need to tailor the spoken narrative for individual audiences as well as the

wisdom of presenting visual information simply and clearly. The tape done by the frustrated mathematician lets this one follow on nicely.

Students and instructors alike have been most positive about these tapes. It's a way to add zip, color, change of pace, and--most of all--credible support for the mainstay teaching objectives of tech writing. The tapes must be aimed at a specific objective, make the point, and not drag. They work. Especially when the subject is printing to a computer or an airplane, you can almost hear the class thinking to itself, "That's where I'll be someday."

Okay, you get the idea. But what about nuts and bolts? Well, all you need is any portable video taping unit, known in show biz as the minicam. Most schools have these as standard equipment; they can be toted around with relative ease. What you've got essentially is a combination small hand-held camera attached to a battery driven/optional plug-in taping unit. There are any number of models put out by outfits like SONY, JVC, AKAI, Hitachi, Ikegami, RCA, Philips, Sharp, and dozens of others. They can be sophisticated color or black and white. You can mount them on a tripod.

With shooting capability you also need a way to show your tapes. Here, too, systems range from elaborate closed-circuit systems pumping video into classrooms sets to a basic player unit you wheel into a room. You've seen that on popular markets as the Betamax, except that most of the school videocassette units don't have the record mode.

They're just for playback. Again, there are dozens of manufacturers and models. I'm throwing brand names at you just in case you need a place to start. These dealers, or a publication like Educational & Industrial Television can bring you up to speed on the looks and kinds of equipment I'm taling about.

But start at your school first. Look for the audio-visual center, or telecommunications division. It's all going to be there, waiting for you. At the Academy we are fortunate enough to have both systems I mentioned, managed by an outstanding production/studio facility known as the Directorate of Audiovisual Services, DFSEA for short. DFSEA has minicams, studios for big productions, editing machines, and a distribution unit which pumps tapes into hundreds of classroom TV sets.

Because I had DFSEA to work with, I had a good deal of flexibility. My limitation was really self-imposed: rather than tote a taping unit into the field, I used whatever I found at a base. Thus, most of my tapes are in black and white. Often these very basic cameras were used as engineering tools for observing equipment and flightline tests. They also used ½" tape, but I'll get into that later. I used what I found and did the best I could. The enthusiasm of both the subjects and the makeshift camera crews made up for it all.

But I gained flexibility when I returned home with my cuts. The pros in DFSEA did a first-class editing job on the miles of tape I shot out in the field. This raised the quality of my stuff considerably. I always knew enough to overshoot; we tightened it up later.

You take out the good parts and use them. It's a case of the "face on the cutting room floor."

Engineers also gave me stuff they had shot, like the tapes of that canopy-off test I told you about. Their footage can add even more visual wow to your final tape. And you can add slides and movie cuts later on, too. That's if you've got that sophisticated unit like DFSEA. Added action and picture help "sell" the message.

But maybe you don't have a unit like DFSEA. Don't worry. You can do just fine as long as you have a basic camera and playback unit. You just shoot with care and edit as you shoot. Make everything count. It's tough, but by careful rehearsal you can shoot straight through and tape final as you go. Take heart, the old "Studio One" television program was shot live on the air and still remains one of the best things ever done. Tech writing teachers have what it takes!

By the way, I promised to explain tape sizes. Well, it looks a lot like the audio tape you run reel-to-reel or in cassettes. Only this tape can record sound and picture. Basic sizes are 1/2", 3/4", 1" and 2".

One-half inch (reel-to-reel) is getting outdated; the 3/4" is popular in schools and industry; state of the art is 1"; and you still see TV stations using the 2". Betamax and VHS use 1/2" cassette. That old 1/2", some 1", and the 2" are reel-to-reel. Don't let that

confuse you. It's either going to be reel-to-reel or cassette, black and white or color, and lots of fun. But I hope you find color, 3/4" cassette capability at your school.

If you have a studio, you can do some nice things there, too. But my pitch is to get out into the field where the action is. Get in that lab.

I used the studio to make a short introduction to each tape. I set out the objective of the lesson and introduced the setting of the tape. This was done on a very nice set that said, "Department of English." In color intros look polished. We gave the illusion of going into the roll-up-your-sleeves field.

By the way, you can also grab famous guest speakers or visitors when they pass through your school; get them into the studio, and make a tape. If they're really big, you can take the risk of making a "talking head." But always remember: keep it short. Seven minutes is enough.

You don't have to be a mass media type to do these tapes. Teachers are natural performers (hams), anyway. Pauses and "ahs" don't hurt at all. As a matter of fact, the more natural you and the subject are, the better the tape. Just get out there--camera in hand--and get that shot. You've probably been asking industry for reports and live speakers already. Do a tape. Seek out the audio-visual people. Start now. You'll learn fast.

These tapes won't solve all of your classroom problems. But they will add a colorful dimension to your own lesson plan. Students traditionally fight the problem, especially when it comes to writing in

our formats. Getting the word from the horse's mouth does a lot for quelling the rebellion. Jump in; the water's fine.

Okay, that was the first case of using technology to teach. That's one you can do. Let me tell you about the second case, which is a little "far out" as our students are apt to say. Instead of playing tapes in the tech writing classroom, I decided I'd try to put the tech writing class into a TV environment. What happened was "Blue Tube."

A couple of years ago, J. C. Mathes and Dwight Stevenson gave me an idea during a conversation. We all agreed that you could teach tech writing within "context." We used that idea at the Academy by making our students create a company on paper, and then write all their reports as if they were being done in that company. Reports were even routed to make-believe company officials. It worked well.

Since I'm a mass media type anyway, it wasn't long before I approached my department head (God bless him for his understanding and patience) with the idea of really putting together a live company. "What will you manufacture?" he said. "Television programs, Colonel Shuttleworth," I replied. After six months of experimentation, English 330 Honors (Blue Tube) was born. We're now running four sections of it.

Here's what we do. I skim the top eighty honor students off the junior class. Though all juniors must take our core English course, I give these high grade point/A in English students the option of taking

330H. In this course they join a TV production company, learn how to write scripts, work together to gather news, perform all technical studio functions, and still write the technical papers required by the regular writing course. Whew! That's why it's honors students, by invitation only.

They get a lot of extras. They enter the course a section size of twenty, but then divide. For half of the semester they serve on the writing staff, and then switch at midterm to learn how to run a camera, the audio booth, the switcher, VTR machines, or any number of studio positions. English teachers teach the writing track, while Air Force sergeants--expert in TV production-- teach them about the TV production game.

What about writing? Well, as I said, they write scripts, a very artful form of communication in itself. But they also write the required technical description paper. In 330H they describe some aspect of the actual piece of television equipment they worked with. Along with visuals, they turn out super papers which describe cameras, lenses, tape units, and so on.

These papers are written within the "context" of the company. They're checked for technical correctness by the sergeants and then graded by the English instructor for all of the things we look for in a report.

But that's not all. There's a big formal report, too. The students write this one while they're assigned to the writing staff. It can either be technical or concerned with some aspect of mass media theory. It's a

big effort, complete with documentation and all the trimmings. It's graded by the English instructor.

We require cover letters, visuals, graphs, tables, and everything you'd want me to include in report writing. But we also grade the scripts, the performance over the tube, and the communication that takes place as the team puts out the twice weekly program known as the "Blue Tube." Yes, our classroom's on the air.

Remember I told you that DFSEA has this tie with hundreds of TV sets all over the college? Well, "Blue Tube" is shown twice weekly, between the seven class breaks during the Tuesday and Thursday academic day. Our students not only learn report writing, scripting, news gathering, technical production, and organizational communication, but also provide a valuable information service to the entire student body.

And during evening hours we even show the programs to the family housing areas on the Academy grounds. This gives us an audience of 1200 sets. We present news, features, interviews, and sports. Our cameras go out into the field to cover events. We're just like the local news broadcast, but we concentrate on what's happening in the Air Force Academy community.

One big extra I might expand on is the exposure our cadets get to the Air Force enlisted people who teach the technical side of the course. These sergeants are talented professionals who make our TV company very much like a real Air Force unit. Our future lieutenants learn lots and see first hand what kind of talent they will be working with after graduation. It's a valuable "extra."

Another thing I might add is the fact that the Management Department has joined with the course. Their advertising students write and produce the commercial spots for the program. These students get great real life training as they plug various on-base services over the air. There's nothing like "doing it."

And that's the story of what has to be the, shall we say "most unique" technical writing course you might find anywhere. But I think it has a good deal of merit. The reports we get are as good as we've seen, and the extras in terms of learning the communication process in a number of situations is very productive. Our technical students are working with hardware, writing about it, and communicating with it.

Thus, two cases of using technology to teach. I'm positive you can use the first; therefore, I went into detail as I talked about the tapes. You may just not be ready for anything like the "Blue Tube." But there might be another "context" you could dream up. There are endless companies that could be formed, if only on paper. I just think any sort of realism makes for a better tech writing class.

CONCLUSION

We teachers of tech writing prepare students to communicate in an age of complicated technology. We might not have science degrees, but we sure do read a lot of science. It rubs off on us. We're caught up in technology, and we're enjoying it. Why not take some of that technology and put it to work? Why not use technology to teach?