

How to Give Better Technical Talks

**Agricultural & Biosystems Engineering
&
Agricultural Systems Management
Programs**

**Agricultural & Biosystems Engineering Department
North Dakota State University
Fargo, ND 58105-5626**

HOW TO GIVE BETTER TECHNICAL TALKS¹

Communication is a **window**. Our talents and achievements could be considered the "exquisite furniture" of our technical careers. We are judged or evaluated as professionals based on these talents. Unfortunately, this "furniture" is in a room with no doors and only one window. Our colleagues, supervisors and subordinates cannot walk in and touch or smell our talents directly. Instead they must judge us by looking through our **window of communication**. Our talents are revealed to others only through writing, speaking, or other forms of communication.

"Communication windows" which are smudged, dusty or fogged over, give others a distorted, unclear view of our abilities.

Paper Presentations

The quality of oral presentations is important. Whether we like it or not, the audience judges us by how well we condense our work into a short talk. And the judgement goes beyond the individual speaker.

If you give a poor speech, the audience might be thinking, "Not only is he/she a poor professional, but North Dakota State University must be just a football factory."

So your professional reputation and your employer's reputation are at stake as you approach the lectern.

Effective speaking requires...

Preparation,
Organization,
Interest,
Action, and
Visual impact.

Preparation

The three most important ingredients in any presentation are:

Preparation ... Preparation ... Preparation

When you are prepared, your attitude improves, and your confidence grows. Preparation can compensate for lack of talent.

Know your goal. Even if you are simply "presenting information," your real goal is to have the audience understand your information and ideas in the way you intended them to be understood.

¹Adapted from "How to Give Better Technical Talks" as prepared for presentation to the ASAE by Randall Reeder, P.E.

Spend at least 5 to 10 hours preparing a 15-minute talk. Preparation of good visuals will take even longer. Other than preparing visual aids, most experienced speakers will not work that long on one speech; but be prepared to spend more if the quality of your talks starts to slip.

Many presentations today are given with the aid of presentation software such as Microsoft PowerPoint. PowerPoint is a multi-media tool that makes it easy to organize, illustrate and deliver your ideas professionally. It is a great aid for conducting meetings, presenting to an audience or sending your presentations over the Internet. PowerPoint uses media integration that allows you to easily and professionally make your point.

Organization

Organize your oral presentation more like a front-page news story than a mystery novel. For a presentation longer than 5 minutes, consider the benefits of the "one-page executive summary" at the beginning.

If you have only 2 minutes to review a typical ten-page research paper, which sections do you read? If you're like most people, you would read the abstract, the conclusions, and look at the pictures. You do not start on page one and read for two minutes.

An oral presentation should provide the same quick overview for the audience.

Repetition

Repeat main ideas. Repeat main ideas. Repeat ... Readers can turn back a few pages to double check a key paragraph. Listeners cannot. If you emphasize 3 or 4 key points, you won't have time to cover all 10 or 20 less important points.

Is this a problem?

The audience will remember only 3 or 4 of the ideas presented anyway, so it's better if you select those for the listener. If the audience must have the other information, provide a written supplement.

The success of a technical presentation is not determined by how much information is presented. Rather, what counts is how much essential information is understood and retained by the audience.

Who gets tired? In any speech, either the speaker or the audience gets tired. If the audience has to work hard to understand what the speaker is trying to accomplish, they will rebel! The harder you work at preparing and presenting your talk, the easier it is on the audience. And, they will like you better for it.

Audience Analysis

There are many "audiences."

- S Often the audience will be one person
- S Six managers or the board of directors
- S Five people who work under your direct supervision
- S Thirty members of a local civic club
- S The audience may be 50,000 viewers of a local television news program waiting for your explanation of how your company allowed a hundred gallons of a toxic chemical to spill into the river.

Each audience requires somewhat different preparation.

Don't expect to satisfy every person in an audience of 10 or more. If someone is obviously bored or not paying any attention, don't knock yourself out trying to win him or her over. You can easily use 80% of your energy trying futilely to communicate with 5% of the audience. Concentrate on key listeners.

The message is #1. In a technical presentation to a technical audience, written or oral, the content is critical. Speaking skills are still important but cannot rank above #2.

Your audience must understand your words, or you can't expect them to understand the message. Ask yourself these four questions about the words you use:

- Are you being specific?*
- Are you saying what you mean to say?*
- Are you saying all you mean to say?*
- Will the audience understand your words?*

People who attend technical seminars or single presentations tend to have a specific purpose, a sharp focus, and for the most part, are demanding and serious. They value their time. If they feel their time is being wasted, they will certainly let you know.

In dealing with technical material, a speaker should take the audience from where they are to where you want them to be.

What Is a Good Speech?

- S It renders a service
- S It gives valuable and important information the audience probably wouldn't have otherwise
- S It should be in a form they can put into immediate use
- S It should motivate and inspire them to want to put it into immediate use

Enthusiasm and Persuasion

A new book by world-renowned speech expert, Bert Decker², points out a common problem for most technical speakers. Decker says we each have two brains: the "first brain" is emotional, non-rational; and the "new brain", which is the seat of conscious thought, memory, language, creativity, and decision-making. When most people, especially technical people, speak, they aim their message at the new brain and overlook the first brain. The key: **to reach the new brain (rational) our message must first pass through the first brain (emotional)**. Otherwise the message will be diminished, distorted, and may not get through at all.

How does Decker suggest we reach the first brain? By being **warm, genuine, less inhibited**, and by speaking with **energy, enthusiasm, and expression**.

One survey disclosed that four out of 10 top executives said they have fallen asleep during office presentations?

Another revealed that 44 percent of 200 vice presidents responding said that most business presentations were "boring" or "unbearable".

Here are some things to do to keep dozing to a minimum during your presentations:

- S Concentrate on the first 15 to 30 seconds of a presentation because they are critical.
- S Establish eye contact and rapport before you turn out the lights for a presentation.
- S Master your subject and be enthusiastic about it. You need to believe in what you're saying.
- S Never read or memorize your presentation. Reading reduces eye contact, and memorization makes your talk appear canned. Strive to be as spontaneous as you would in everyday conversation
- S Learn how to use your voice with high and low and loud and soft tones
- S Use "periodic power pauses." Refrain from talking. This allows you to think and your audience to digest what you've said. Pauses add a dramatic punch
- S Be natural with your non-verbal actions. Smile, frown or look surprised when the occasion calls for it.

²*You've Got to Be Believed to Be Heard*, reviewed by Communication Briefings, April 1992.

Visual Aids

Good visuals can make a good technical presentation better, yet an excellent speech can be destroyed by poor visuals. Even a few bad slides in an otherwise good set can ruin a good speech.

Why Use Visual Aids?

- S Retention increases from 14% to 38% when listeners see as well as hear.
- S Time required to present a concept can be reduced up to 40%.
- S Group consensus occurs 21% more often when visuals are used.

Tips for Slide or PowerPoint Preparation:

- S A slide should present one and only one central idea.
- S A slide should be as brief as possible. It is better to make two slides, each of which will convey its message forcibly and clearly, than to make a single crowded slide that may confuse the audience.
- S A slide should not be entirely complete and self-explanatory, because it is supplemented by the speaker's explanation of the point it is intended to illustrate.
- S Only the specific items to be mentioned in the presentation should be included. All nonessential captions, figures, equations, and the like should be omitted; otherwise, audience attention may wander to unimportant details.

These basic rules aren't etched in stone, but you won't find any better "commandments" for producing good slides.

The most common problem is putting too much information on one slide. A related problem is **using too few slides**.

Some people say too many slides is a problem. But the only real difficulty is **talking too long about each slide**. Eighty slides is not necessarily too many for a 15-minute talk.

You can describe a new combine design much quicker with 20 slides than with one. As you consciously plan to use more slides, you will naturally reduce the need for too much information on any one of them.

Tables and figures directly from a research paper are never suitable. They are cluttered with too much detail and cannot be read beyond the third row without binoculars.

Do not show complicated formulas or long **equations** unless absolutely critical.

Do not expect a single "all-purpose" visual to be ideal in a paper, slide set, poster display, videotape or other media.

The Pointer Principle

Do you want a method to help you eliminate the cluttered slides? Try the "Pointer Principle":

The more you must use a pointer...the worse the slide set.

A good slide will naturally cause the viewer to focus on the desired area. (Sometimes an oral instruction helps, such as "The red line shows...")

Here is a simple example of the Pointer Principle:

Using one slide (a side view of a tractor), the speaker discusses the radiator, fuel injector, differential lock, pto shaft, and air cleaner. During the 10-minute lecture he uses the pointer to identify each item. When he gets to the air cleaner he announces brightly, "It's on the other side of the tractor," as he glances at the back of the screen.

Unfortunately for the audience, a speaker often uses a **pointer as a cane, twirling baton, and screen beater**. If the speaker is several feet from the screen, he may substitute a "flashlight" pointer, in that case he simultaneously does his imitation of Don Knotts in the "Shakiest Gun in the West". It's hard to concentrate on the speaker's message with a light bouncing around the front of the room.

How could the tractor presentation be improved?

Include at least one **close-up view** of each tractor part discussed. **Additional views** may help, such as photos of a dirty air filter element being removed and a new one installed. A **cutaway drawing** of the air cleaner, in color, showing the air flow path would help. By showing extra slides of each part the speaker intended to "point" out, the **presentation becomes clearer and probably shorter**. And the pointer is not needed.

Does the Pointer Principle work with **tables**? Of course.

Begin with a slide with 5 rows, 6 columns. That is 30 characters, the maximum allowed for a reasonably good slide. Suppose you want to discuss this slide for 2 minutes, emphasizing (pointing out) 5 of the numbers.

Before proceeding, consider this: If you are discussing only 5 numbers, why show the others at all, and would that data be clearer in a different form (charts or graphs)? If you still insist the table is needed, with all 30 numbers, use 5 slides with the emphasized number circled or highlighted in each one.

Why not use just one slide with the 5 numbers circled? While you are discussing the first one, the audience will be wondering what is going to be said about the other four. You should keep the attention riveted where you want it. And you can do it without a pointer.

More Slide Tips

- S Portrait oriented slides** are a no-no in technical presentations.
- S Use color.** A figure in a paper is black on white. Five curves on a graph may be identified by symbols such as ----- and o-o-o-o-. For a slide, use color to distinguish each curve, with the identification written clearly, in the same color, near or on each curve. To help color blind listeners (10% of all males), orally identify or locate colors.
- S Simplify figures and tables** for slides. All writing should be horizontal or close to it. Show only the essential information for the point you are making. Eliminate clutter and details.
- S Round off numbers.** Calculations or conversions from English to SI units sometimes result in unjustified precision. Do not say "40.47 hectares" if what you mean is "about 100 acres." Use precise numbers if needed in your written communication, but simplify them for your speech.
- S** The availability of **computer graphics** for top quality slides has eliminated most excuses for poor quality visuals.

Overhead Projector Tips

- S** Most of the tips on slides apply as well to overhead transparencies.
- S** However, a list of ten items on a transparency can be **revealed one at a time**, replacing ten slides.
- S** You can discuss five numbers on a table, marking each with a special pen as you speak, replacing five slides.
- S** Room lights can stay on and bright.
- S** You can easily add, take out and rearrange transparencies.
- S** You can maintain eye contact, always facing the audience.

Unfortunately, the ease of use and the flexibility sometime results in poor, sloppy presentations. You must discipline yourself as a speaker to prepare good quality, colorful, legible transparencies to get the full benefit from the overhead projector.

Although most overhead transparencies are "vertical", it might be good to use the same horizontal format as a slide. Therefore, since a typical overhead projector is about 9 inches wide, use only 6 inches vertically on any transparency.

Microphone Tips

- S** Practice with the microphone before the session begins.
- S** Watch how the presider and other speakers use the microphone, and learn from their experience.
- S** Do not shove the microphone aside. If it's there and other speakers used it, you probably need it too.
- S** Adjust the microphone position once, then if s "hands off".
- S** Keep the microphone below chin level so everyone has an unobstructed view of your face.
- S** With a stationary microphone, imagine there is a string connecting your nose to the microphone. As you move, or turn to look at the screen, always keep facing toward the microphone.
- S** With a hand-held microphone, find the best position for it and try to keep it there. Gesture with the other hand.
- S** Ahead of time, ask someone in the back row to signal you if your volume needs adjusting.
- S** Continue to use the microphone during questions and answers. Repeat the question before answering.

Preparation Tips - Presentation Slides

Effective slides should clearly communicate and clarify your message.

Keep Slides Horizontal

Keep It Simple

- Limit each slide to one main idea.
- Limit each slide to 20 - 30 words.
- Use several slides to communicate a lengthy idea rather than one complex slide.

Keep It Legible

- S** Limit text to (7) lines and explode text to fill the slide for maximum text size and readability.
- S** Double space lines of text.
- S** When using photographs, closeups work best.

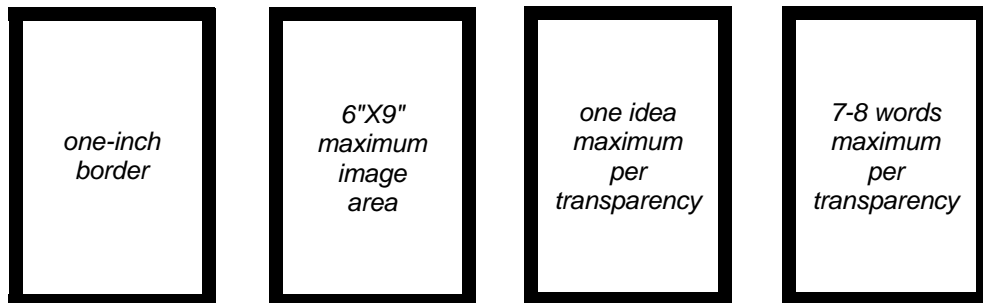
There is no ideal number of slides to use in your presentation. When planning however, you can allow for these various considerations by observing the following guidelines:

- S** If you're using a single projector, aim for a slide change about every 10 seconds. That means you'll be projecting between six to eight slides a minute, a pace that should maintain viewer interest.
- S** If you're projecting slides containing graphs or charts, slow down the pace of the presentation. Remember: Even though you keep these slides simple, the viewer still has to perform some analysis, and that usually requires slightly more time than needed just to take away a visual impression. Let your own common sense be your guide: See how long it takes you to absorb the information on the slide, then add a second or two. (Remember: You're going to be familiar with the material on the slide.)
- S** Plan a time before your presentation to review your materials. The more familiar you are with the information and slides, the better your presentation. Practice your presentation at a lectern.

Preparation Tips - Overhead Transparencies

The use of overhead transparencies is not recommended for audiences of over 50. If an overhead must be used, please follow these guidelines for effective presentation.

Design



Legibility

Transparencies may need to be read by a person as far away as 20 feet from the screen, so use upper/lower case lettering. Letters should be at least ½" wide and 1" tall. Overheads do not have magnification power of slides due to the needed proximity to the screen. The maximum number of lines of text for slides would equate to 7 overhead transparencies.

Technical Drawings

Line drawings should be simplified by:

- S** Show only the important ideas in detail and indicate surrounding components as simple outlines.
- S** Don't mix lettering with drawings or graphs.
- S** Use color to separate important elements.
- S** Break down complex subject matter into several simpler illustrations.
- S** View the art from six art-work widths away to see how it will appear when projected and viewed six screen widths away.

Use

Generally transparencies should be used to emphasize key components of an idea. State the idea in a condensed manner; usually three or four words should suffice. Use bullets to emphasize key aspects. No more than four bullets should be used per transparency.