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Improving the Effectiveness of Graduate Seminars

Suman Singha¹ and Stacy A. Gartin²

*Division of Plant and Soil Sciences, and Division of Resource Management,
West Virginia University, Morgantown WV 26506-6108*



Singha



Gartin

Effective verbal communication is essential not only in teaching and extension, but also in research. Research results presented at meetings are often rendered ineffective due to a poor presentation or indecipherable slides (1). Recent reports in *HortScience* have addressed the preparation of posters, a popular means of communication at meetings (12, 13). However, although a person can "escape" a poor poster, this option is generally not available to the audience in a presented paper. Poor presentations accompanied by inadequate visuals create an even greater problem for students during lectures in the classroom. Graduate seminars, mandatory in virtually all institutions, can provide the training ground for developing effective communication skills, preparing audio-visuals, and understanding that to be meaning-

ful a presentation must be tailored to the audience.

Until a few years ago, our students, as in many other institutions, were assigned or selected a seminar topic, presented the seminar, and were critiqued following the presentation. Although this experience gave graduate students confidence in facing an audience, the shortcomings often recurred at the next presentation in the following or some subsequent term. One reason for this was the students' unfamiliarity with techniques for making an effective presentation. We therefore decided to revamp our seminar to make it more meaningful. Not only do we require a review and assimilation of literature on the seminar topic, but we also emphasize the preparation of good visuals and verbal delivery. This article is a brief overview of our approach to the graduate seminar and some of the information provided to students to improve their presentations.

TOPIC SELECTION

Each term, students are required to make two presentations. The topic for one seminar

(generally the first) is selected by the student, whereas the second is assigned by the instructor. This procedure allows the students a degree of flexibility in one presentation, while requiring them to review and synthesize literature on an assigned topic unrelated to their research area. Because the optional topic is one of interest to the student, the individual feels more comfortable when addressing an audience. The diversity of student-selected topics have ranged from "electron microscopy as a research tool" to "fruit growing in Germany". All speakers are required to distribute an abstract with five to seven current literature citations to the audience prior to each presentation.

INSTRUCTION ON SEMINAR PRESENTATION

Information on preparing visuals and making an oral presentation is provided to graduate students at the beginning of the term while they are compiling information for their seminars.

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¹Professor of Horticulture.

²Assistant Professor of Agricultural Education.

1) Preparation of visuals

Although overhead transparencies may be used in seminars, we recommend that students use 2×2 slides. Slides tend to be less expensive than other visuals, are easily cataloged, and have a long life. Furthermore, data and pictorial slides can be easily integrated during the presentation.

Pictorial slides. Slides used in a talk should be pertinent and should clearly illustrate the point being made. Most students, although familiar with basic photography, should review information regarding types of films and filters, picture composition, and depth of field (5, 7). Three exposures of each subject, including one above and below the recommended f-stop, will ensure that at least one good slide is produced.

For close-up photography, we have found the copystand shown in Fig. 1 to be extremely effective. The camera is mounted on a vertical pole, and its distance from the subject can be varied as desired. The frame holding the lights was constructed at little cost by bending 1.27-cm (0.5-inch) electrical conduit tubing. The lights on either side are movable and wired in parallel. Each porcelain lamp holder and outlet box assembly is secured to the conduit tubing with two pipe clamps, thereby permitting rotation and also horizontal movement of the light when required. Depending on the illumination needed, either two or four 3200°K photo-flood lights can be used simultaneously. The bulbs should be tilted at a 45° angle to provide uniform illumination. The specimen is placed on the raised glass plate, thereby avoiding any shadows on the background. This procedure allows for easy changing of the background color and prevents the background from getting scruffy or damaged, especially if wet specimens are being photographed.

Title and data slides. Title and data slides tend to be more difficult than pictorial slides from the standpoint of composition and legibility. A high-quality slide cannot be produced from poorly prepared tables or graphs. An original copy having excellent-quality black lettering on a white background will produce the best final results. A personal computer (PC) can be used effectively to modify font size and style to achieve desired results. A laser printer will produce an excellent original; however, a dot-matrix printer should not be used. When preparing originals it is important to remember that: a) A 35 mm (2×2) slide has dimensions of 36×24 mm or a 3:2 width to height ratio. Graphics should be generated at similar ratios to ensure a "good fit" on the final slide. b) Title and data slides should contain only essential information. The contents of a slide should be assimilated by the audience in about 30 sec. Extraneous information will clutter the slide and make it more difficult to comprehend. c) Wherever possible, data should be presented as a graph rather than as a table, as the former is easier to understand. d) The size of lettering should be large enough to be clearly visible from the back of an average-sized room. A simple guideline is that

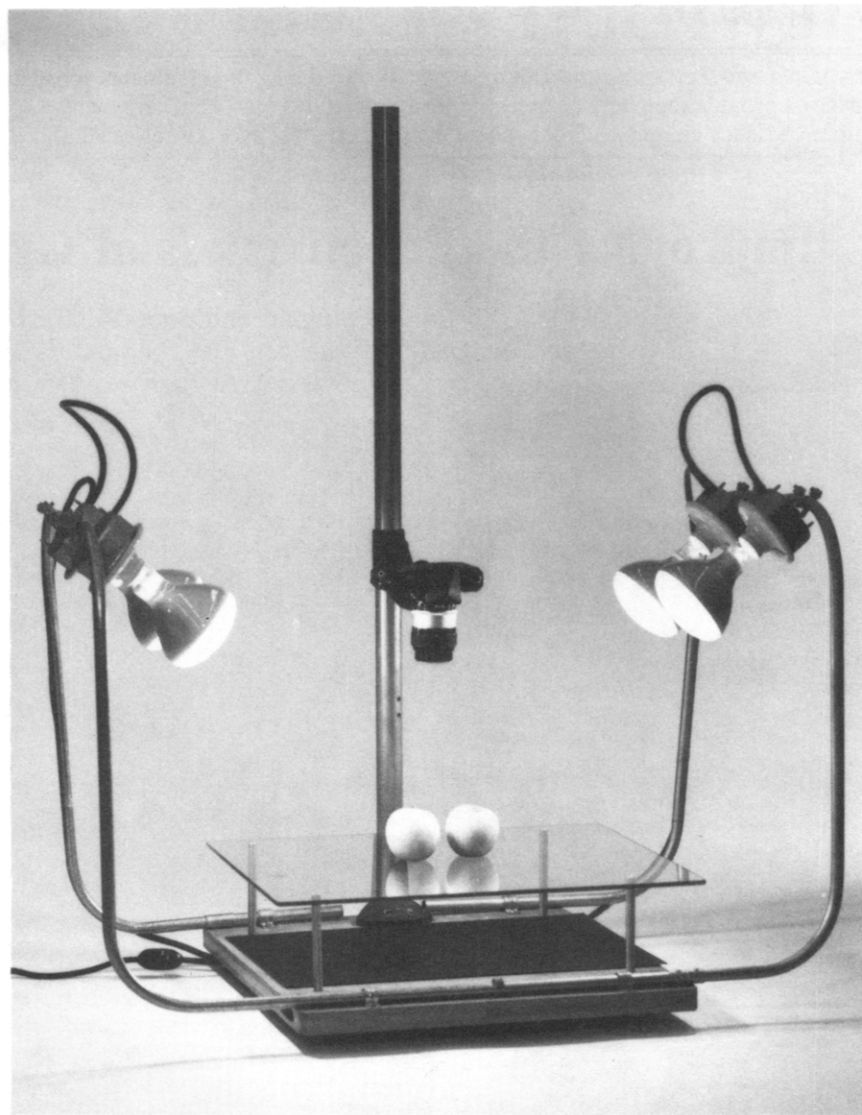


Fig. 1. A copystand for preparing slides from an original copy and close-up photography of specimens.

the size of lettering on the original copy is suitable if it is clearly legible when viewed from a distance 8 times the height of the original (4). However, a legibility calculator (4) should be used to determine the size of lettering required on the original for the slide to be legible at various viewing distances and screen sizes.

Several film types are available for preparing slides from the original copy. The choice of film is a function of the effect desired, turnaround time, and cost. Films are available to make either copy (positive) slides or reverse-text (negative) slides. Kodak Ektachrome film results in a positive of the original and produces excellent slides from electron micrographs and black and white or color photographs. However, using Ektachrome film for black and white line drawings or typed materials can result in information being hard to visualize because of excessive illumination through the white or light background. Both the film and the E-6 process for film development are locally available and turnaround time should not exceed 24 hr. In situations where instant turnaround of 35 mm slides is needed, Polaroid Polagraph HC can be used for black and white

figures or typed originals and Polaroid Polachrome CS for color illustrations and general photography (10).

Reverse-text (negative) slides are preferable for title or data presentation because they improve legibility and are easy to visualize. Slides prepared with Kodalith film have a black background with white lettering (9) and can be tinted to the desired color with commercially available dyes or with food coloring available at a supermarket. A blue background is commonly used for reverse-text title and data slides because it reduces eye fatigue and contrasts well with the white lettering (8). Preparation entails a two-step process using Kodalith film to obtain a negative and then exposing the negative on another film, such as tungsten-balanced Ektachrome (50 ISO). This additional procedure adds to both the cost and turnaround time. These problems can be alleviated by using Kodak Vericolor slide film SO-279. Vericolor film has the added attraction that slides in a wide array of lettering and background colors can be obtained from black and white originals simply by attaching different filters to the camera (11, 14). The C-41 process used to develop the film is the

same as that used for Kodacolor print film. Most photofinishers will process the film within 24 hr, and the turnaround time can be reduced to 1 hr at some locally available processing services. Any single lens reflex camera with the appropriate filter(s) and a copystand are all that is necessary to prepare a slide of the original copy.

Computer-generated slides. Discussion on title/data slides dealt with preparation of an original copy that is photographed to produce a slide. New equipment, such as the Matrix Personal Color Recorder (PCR) (Matrix Instruments Inc., Orangeburg, N.Y.) can be directly interfaced with a PC (or mainframe), thereby simplifying slide production and alleviating the need for a hard copy. Graphs or tables can be generated using various available software programs on a PC. The information can be used directly (or from disks) by the PCR to generate high-quality 35 mm slides in an almost unlimited multitude of colors and a variety of font sizes and styles. Due to the lowered labor requirements and the speed of preparation, these slides may cost less and have a quicker turnaround than the two-step blue background slides produced at photography services using conventional techniques.

2) Presentation of information

The talk should be well-organized and integrated. In order for presentations to be effective, they need to be rehearsed with visuals under simulated conditions. Practice will assist in staying within the time allotted and minimize nervousness (3). Rehearsing will also ascertain whether the slides are in the proper sequence and orientation. Although these steps seem too simple to be mentioned, they are problems repeatedly encountered during presentations. It is important to remember that prior planning prevents poor performance.

The presentation should commence with an introduction and end with a brief conclusion. It is essential that the introduction immediately capture the audience's attention. Both verbal and nonverbal communication skills are important in holding audience attention throughout the presentation.

Some of the key verbal skills that should be practiced are rate of delivery, voice pitch and volume, and articulation and pronunciation. Variation in the rate of delivery will facilitate comprehension by the audience. Do not simply read the slides, explain what they mean and emphasize the main points. Avoid statements like "you can see. . .", "this slide shows. . .", and vocalized pauses of "and. . .ah," "ok", or "alright". Volume and pitch should be adjusted to the size of the room and the importance of the point being made. Clear and correct articulation and pronunciation of words provide clarity to the message being delivered.

Nonverbal behaviors may complement, impede, or even contradict the verbal com-

munication. Facial expressions, eye contact, tone of voice, posture, gestures, and body movement contribute $\approx 90\%$ of the message (6).

Talking to the slides or excessive use of notes, although less frightening, will bore the audience. Direct eye contact, appropriate facial expressions, and tone of voice assist in emphasizing key points and putting the audience at ease. Although a certain amount of body motion is desirable, poor posture and excessive hand or body movement may distract the audience. A pointer should be used discretely, to direct audience attention to the area of interest, and should not wander aimlessly or tap the screen.

SEMINAR EVALUATION

Each presentation is concluded with a question and answer session. Each member of the audience completes a simple audience reaction form providing favorable comment(s) and suggestion(s) for improvement. Numerical or letter ratings are not allowed. We have found that by critiquing their colleagues, students can compare their own performance and identify areas where they may need to improve themselves (Table 1). Immediately following the seminar, the student and a faculty member discuss the audience reaction forms and the effectiveness of the presentation. These forms are useful in preparing for future presentations. Students' second presentations of the semester are usually a tremendous improvement over their first.

Providing students information on the "do's and don'ts" of preparing visuals and making a presentation have been determined to be extremely useful in conducting a good seminar (Table 1). These results are in agreement with Brun et al. (2), and reinforce the importance of providing such information.

Furthermore, presenting two seminars each semester allows students to gain confidence, quickly correct shortcomings, and thereby improve as communicators.

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Table 1. Student evaluation of factors associated with improving performance in seminars.

Criteria	Mean rating*
Information gained from "how to make a presentation" was beneficial in my presentation.	3.4
I have good knowledge of various types of slides; uses, value, constraints, and time taken to prepare them.	3.6
The seminar proved useful in learning how to make visuals.	3.4
Having the opportunity to make two in-class presentations allowed me to:	
a) Correct deficiencies I made in my first presentation.	3.9
b) Become more comfortable in front of an audience.	3.8
Seminar presentations should only be critiqued by the faculty, not by other students.	1.4
Critiquing presentations of fellow students allowed me to identify areas where I could improve.	3.5
Overall, the seminar proved valuable in assisting me to make a presentation in front of an audience.	3.6

*Rating scale: 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree. (N = 8).