(a) Small companies will fail and disappear
(b) Larger companies, financially sound (diversified) will remain
(c) External pressures will force these companies to acquiesce to the educational requirements outlined in this presentation.

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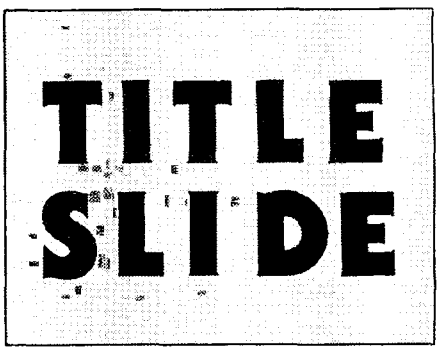
HOW TO

So You Want to Make Good Textual and Title Slides The Easy Way!



James E. Christiansen
and Jimmy G. Cheek

Abstract

Instructors have two options available for making colored, high quality textual, information, graphic, or title slides quickly, simply, and easily. The first technique is to use the negative slide film, Kodak Vericolor S0-279 or 5072, in combination with various filters, different exposures, and standard C-41 processing, to prepare slides with clear colored backgrounds and white or lightly colored letters and lines from black-and-white printed, typewritten, or pasted up copy or artwork. The second technique is to photograph directly off the screen of a microcomputer color monitor using selected color graphics programs to prepare slides with colored backgrounds and differently colored letters and lines.

Have you griped about the dull, colorless, fuzzy, unattractive textual and title slides with which you have been bombarded at professional meetings, seminars, and presentations? Have you griped about the cost of **good** professionally made title slides? Have you complained about the length of time it takes between photographing text or title material and being able to project it on the screen as slides? Help is at hand; read on.

What is the Problem?

Up to now it has been difficult, costly, and time-consuming to produce high quality textual or title slides. Ordinary color slide film, whether "tungsten" or "daylight," can be used to make excellent textual slides. However, to provide "snap" and billiance to the backgrounds of such slides usually requires typing or printing on brilliantly colored and often expensive background paper, the use of differently colored plastic or acetate sheets placed over the textual material and photographed through a polarizing filter, and applying rub-on transfer letters or Kroy tapes of words and sentences to acetate sheeting or colored background paper. Preparing and then photographing slides under these conditions takes considerable time and care.

Good "Kodalith" slides (reverse-text slides of white text or lines on a black background) can be made by instructors in their offices using ordinary photographic equipment and readily available chemicals. However, the process does take time, is somewhat expensive, and requires care in preventing or in correcting white "pinholes" in the negative film.

"Burn-over," or "Burn-in," or "Lithochrome" slides (reverse-text slides of colored text or lines on a black background or superimposed onto a pictorial background) are made in a three-step, time-consuming process in photographic laboratories. Such slides, while very attractive and effective, are expensive ($2.12 to $3.30 each) and often require a turnaround time of three to five working days.

Writing in the **NACTA Journal,** Cotter and Gomez (1979) concluded that "high quality slides can only be obtained through the use of professional methods by photographic laboratories" (p. 25). Consequently, until

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recently, quick, easy, foolproof, inexpensive techniques have not existed for teachers to use in preparing high quality textual, graphics or title slides in their own departments under normal office or classroom conditions.

Photograph the Microcomputer's Screen

Yes, this can be done. With the proper monitors, color graphics and text programs, and photographic equipment, good slides will result. You should consider this technique. Earle (1983) outlined a process for accomplishing this. He composed his slides on the computer screen using Wordstar and Ektachrome 35mm slide film, a 35mm SLR camera, tripod, a cable release, and either a 135mm lens or a 50mm lens with a teleconverter to shoot slides directly off the screen. The biggest initial problem he found in copying slides directly from a monitor was in determining acceptable exposure. However, the major limitation cited by Earle was that "The result is certainly not as good as slides made either by purely photographic techniques or by dedicated computer-generated slide copiers" (411). The latter are expensive, ranging to $2,800. Fridlund (1983) described a process very similar to Earle's. He recommended using the program, PC-Title, to generate titles and graphic displays. He also recommended bracketing to shoot slides on the screen at 1 f-stop above and 1 f-stop below the calculated exposure setting. Fridlund's procedures result in excellent slides.

Personnel in the North Central Computer Institute at the University of Wisconsin, Madison, are using similar procedures to produce slides. They use the programs Pixel Visuals and Micro-Soft Chart to generate images and report very good success shooting directly from the PC screen. They indicated that the quality was very acceptable for extension and teaching presentations. In some cases, however, they have to use a Polaroid Pallet, which transmits computer images from the screen, then enhances the image electronically to produce a higher quality slide. The major limitation of the Pallet is that it costs approximately $2,000. For information on different processes used at the Center, contact Arlin Brannstrom, Assistant Director, North Central Computer Institute, 664 WARF, 610 Walnut Street, University of Wisconsin, Madison, WI 53705.

Private commercial services are also available. For example, Visual Horizons, 180 Metro Park, Rochester, New York 14623 provides a process called Computer Slide Express. Using this process they create slides at their location. In order for a slide to be created, the user either sends a disk with an image file or transmits the data via a telephone modem. They provide 24 hour turn around service upon receipt of disk or telephone communication. However, services such as this are expensive with a cost of $9.00 for single slides and from $6.50 to $8.00 per slide for packages of 100 to 300 slides.

Besides the PC-Title, Pixel Visuals, and Micro-Soft Chart programs mentioned above, the following are among programs that may be used to make textual, title, and graphic slides directly off the monitor's screen: Di-Graph, Story Board, WordStar, Word Vision, PC Writer, Chart Master and P.C. Illustrator. In all cases, however, highest quality slides result when 1) the brightness of the monitor is reduced to the point where resolution and contrast is still high, but "bloom" or "haloing" around each character is minimized as much as possible, 2) camera exposure times are 1/8 second or longer, 3) the camera is placed on a tripod and set for manual, not automatic, metering, 4) a 100mm or longer focal length lens is used to minimize barrel distortion, 5) room lights are turned off, 6) exposures are bracketed at least 1 f-stop, and 7) the monitor screen provides a resolution of 640 x 200 or better.

What are the Pros and Cons?

Based upon our review of using microcomputers to generate slides to be photographed directly off the monitor's screen, the following advantages and disadvantages seemed to emerge:

Advantages

1. Slides can be taken and developed locally in a short period of time.
2. Ordinary daylight type films, such as Ektachrome, which are developed in E-6 chemistry may be used.
3. Slides are easily composed using a personal computer.
4. Color slides may be prepared when using a color graphics card and a color monitor.
5. A variety of software is available to generate images.

Disadvantages

1. Proper exposure may be difficult to obtain.
2. Bracketing may be needed, thus requiring three exposures for each image.
3. Letter quality from a microcomputer screen is not as good as letter quality print and some letter distortion is evident in the slides.
4. Some extraneous material, such as the cursor, may remain on the screen when the picture is taken.
5. Color options available are limited to the computer software in use or available.
6. A microcomputer, color monitor, appropriate software, and camera equipment must be available to the faculty member. If not available, the cost of slides produced with such equipment may be quite expensive.

What if You Don't Have a Microcomputer or a Suitable Program?

In this case, the secret to easily making and quickly processing those attention-getting slides that you want is to photograph black-and-white copy with different filters, exposures, and Eastman Kodak Company's "Vericolor" slide film and use your local one-hour or overnight film processor. This copy may be from a daisy wheel or laser jet printer hooked to a word processor, typewritten, hand drawn, or pasted up.

Several departments, including Editorial, Animal Science, Agricultural and Extension Education, and Dairy Science at the University of Florida, Agricultural Education, and professors in Agricultural Engineering, Range Science, and Soil and Crop Sciences at Texas A&M University have adopted this process because of

the high quality of slides produced, low cost, ease of use, and rapid turn-around time.

Because it is not well known, and because it is practical, quick, and inexpensive, this technique is described fully below.

When bought in 36 exposure rolls the appropriate film is called Vericolor S0-279. The cost ranges currently from $6.05 to $6.20 per roll. When bought in 100 foot rolls for bulk loading, it is called Vericolor 5072 and costs about $52.00.

A "slow" film, S0-279 or 5072 has an ISO/ASA rating of 8. Technically, the film is a multilayer color print film that was developed originally "... for direct printing from color negatives or color internegatives to obtain positive transparencies." (Kodak, 1982) However, it has also been discovered that Vericolor slide film is excellent "... for copying black-and-white line artwork to produce transparencies with white, or near-white text on a dark or colored background; i.e., reverse-text transparencies." (Kodak, 1982) It is this practical use that is described.

How do You Make Vericolor Slides?

Because Vericolor S0-279 or 5072 is a negative film, and therefore results in reversed text, the background color in textual slides, as well as its in-

Table 1. Making Textual Slides with Kodak Vericolor S0-279 Slide Film, Assorted Screw-in Filters, and 250W 3,200°K Photofloods

Filter Used on Camera	Color of Slide		Overexposure Needed at ASA16[2]	Comments
	Letters/Lines	Background		
None	Deep yellow	Very dark rusty brown	3 f/stops	Letters "vibrate" on screen unpleasantly
None	Bright yellow	Rusty brown	2 f/stops	
#25-A (Red)	White	Dark turquoise	4 f/stops	Excellent contrast
#25-A (Red)	White	Turquoise	3 f/stops	Excellent contrast
#25-A (Red)	White	Pale turquoise	2 f/stops	Good where bright background is not wanted
#12 (Yellow)	Pinkish-White	Dark Purplish blue	3 f/stops	
#12 (Yellow)	White	Purple	2 f/stops	
#12 (Yellow)	White	Pale lilac	1 f/stop	Used in darkened room
#0-2 (Orange)	White	Cobalt blue	3 f/stops	Excellent contrast
#0-2 (Orange)	White	Blue	2 f/stops	Good where bright background is not wanted
#80-A (Blue)	Yellow	Reddish brown	3 f/stops	Letters "vibrate" on screen
#80-A (Blue)	Pale yellow	Burnt Orange	2 f/stops	Excellent contrast
#80-A (Blue)	White	Tangerine	1 f/stop	Good where bright background is not wanted
#80-A (Blue)	White	Gold	None	Good contrast
#XO (Yel-Gr)	Pinkish-red	Purplish-black	4 f/stops	
#XO (Yel-Gr)	White	Wine	3 f/stops	Excellent contrast
#XO (Yel-Gr)	White	Dark rose	2 f/stops	
#XO (Yel-Gr)	White	Light rose	1 f/stop	Somewhat "muddy pink"
#X-1 (Green)	White	Vermillion Red	3 f/stops	Excellent contrast
#X-1 (Green)	White	Magenta (Pinkish Red)	2 f/stops	Good where bright background is not wanted
#12 (Yellow) and #85-C	Pink White	Gentian blue Purplish-blue	3 f/stops	Very effective
#K-2 (Yellow)	Purplish-white	Prussian blue (Blackish-purple)	3 f/stops	
#K-2 (Yellow)	White	Violet (Bluish-purple)	2 f/stops	Excellent contrast
#K-2 (Yellow)	White	Lilac (medium)	1 f/stop	Good where bright background is not wanted
#K-2 (Yellow)	White	Lilac (light)	None	
#85-C (Wine-Brown)	Pale yellow	Rich brown	3 f/stops	Good contrast, good visual impact
#85-C (Wine-Brown)	Ivory	Buckskin (Persimmon)	2 f/stops	Good contrast, good visual impact
#81-B (Tan)	Yellow	Dark brown	3 f/stops	

[1]All slides described are made by photographing artwork or layout consisting of black letters or lines that have been typed or printed on white paper.
[2]Make basic exposure off an 18% grey card with no filters on the lens of the camera and with the camera set for manual operation.

Table 2. Making Textual Slides With Kodak Vericolor S0-279 Slide Film, Color-Correcting (CC) Gelatin Filters, and 250 Watt 3,200°K Photoflood Bulbs

Filter Used on Camera	Color of Slide		Overexposure Needed at ISO/ASA 16	Comments
	Letters/Lines	Background		
#34-A (Magenta) and CC 50-R	White	4-H Green	3½ f-stops	Pleasing effect
#34-A (Magenta)	Yellow	Green	2½ f-stops	
#34-A (Magenta)	White	Medium green		Good contrast
#38 (Lt. Blue)	Yellow	Red	3 f-stops	
#38 (Lt. Blue)	White	Orange	0-1 f-stops	Good contrast
#29 (Red)	White	Cyan	5 f-stops	
#12 (Yellow) and CC 50-R	White	Royal blue	3½ f-stops	Looks like a "Diazo" slide, pleasing
#58 Green	White	Magenta	2½ f-stops	Good contrast
#12 Yellow	Lt. Purple	Blue	2 f-stops	

tensity, is easily changed (1) by varying the exposure through manipulation of shutter speeds and apertures, (2) by using different filters, and (3) by combining different exposures and filters. Table 1 shows what results can be expected when using filters generally available in screw-in mounts. These are filters that many instructors already are likely to use in their black-and-white or color photography. Table 2 shows that results may be expected when using certain color correcting (CC) gelatin filters. Such filters normally come in 3" x 3" sizes and are placed in a square filter holder that screws into the front of either a macro or normal lens.

Please note that the exposures recommended in the tables are based on the ISO/ASA rating of 16. This was done so as not to frustrate photographers whose cameras cannot be set to the lower exposure index of 8 for which the film is rated.

Also, it can be seen from the two tables that you can vary the intensity or shade of the background color by changing the degree to which you overexposure the film. Consequently, where textual slides are to be interspersed among other slides, you can choose both the color of background and the lightness or darkness of the background that will complement the other slides being shown, something that is not easily done with slides taken off a computer screen.

Points to Remember

First, remember that contrary to ordinary slide or print film, this negative film must be overexposed, not underexposed, to increase density or color in the background of the slide. Also, the brightness of lights or placement of lights should be such that the exposures used are at least one second and not over eight seconds in length. It is true, however, that exposures of one-half second can usually be used without a serious color-shift resulting.

Second, the best and most consistent results come from lighting the work to be copied with 250W ECA 3,200° K photoflood bulbs. These may be obtained from any good camera store and cost about $3.25 each. They should be placed an equidistance apart from the work being copied and at a 45° angle to that work. Do **not** use natural daylight, electronic flash, or blue BCA bulbs. However, you can use ordinary 200W incandescent bulbs, if necessary. If used, such bulbs, being about 2,800° in Kelvin color temperature, will tend to make the background colors somewhat "muddier," especially if red, yellow, orange, or green filters are used.

Third, determine the basic exposure to use by using an 18% reflectance neutral gray card. Place the gray card over the work to be copied, set the camera for manual operation and manual metering, and then adjust aperture (f/stop) and shutter speed (use a shutterspeed of one to eight seconds) to get "normal" exposure without any color filters on the camera's lens. Then use Tables 1 or 2 to determine how many f/stops to overexpose from "normal" for the effect that you want with the filters selected. After determining the exposure to use, remember to put the filters wanted on your camera's lens! Gray cards may be obtained from camera stores. Incidentally, the commonly used "Carnival Antique Red" coverstock, a dark red that is very commonly used for report covers, meters almost perfectly as 18% gray and may be used instead of a gray card.

Make all pictures with the camera set for manual metering as a camera's automatic metering system will be fooled by the relatively small amount of "colored" subject matter and the large amount of white background textual material and will attempt to compensate by underexposing the material photographed. It is recommended that you shoot a test roll, bracketing exposures, in order to establish the proper f-stops and shutter speeds using your own light and copy stand arrangement.

Fourth, if possible, place the camera on a copy stand and use a shutter (cable) release to minimize the chance of vibrations with the relatively long exposures needed. However, excellent work may be done also using a camera on a tripod.

Fifth, if you consistently do a lot of closeup photography, you may wish to invest in a macro lens to secure the sharpest photographs. However, a set of supplementary closeup lenses or "plus" lenses in diopters of +1, +2, and +4, used in conjunction with a normal lens will make good pictures. Such a set of three closeup lenses will cost about $20. Closeup lenses attach to the front of the camera like a filter and do not change the exposure used.

Sixth, if preparing copywork for slides with words, remember to choose letters that are at least 1/25th the length of the vertical side of the "working area" on which you prepare your title, credit, or information slide. For example, if you are preparing a 6" x 9" piece of horizontal artwork to be copied, the body letters should be at least 1/4" high (6/25 = .24 (almost 1/4"). If photographing typewritten or computer printer copy, the maximum number of typed spaces for each line is 54 for elite (12 pitch) type and 45 for pica (10 pitch) type. Consequently, the maximum size of in-

formation area for typewritten copy is 3" wide by 4-1/2" long if the audience is to be able to read what is projected on the screen. At any rate, copywork should be prepared in a 2:3 ratio of width to length to match the format of 35mm slides.

Seventh, if available, use an IBM 10 pitch Orator ball or the equivalent when preparing typewritten copy for Vericolor slides. Tests conducted among 67 graduate students, teachers of vocational agriculture, and county Extension agents in Texas revealed an overwhelming preference for slides made from copy prepared with the Orator ball (45%), followed by 12 pitch Letter Gothic (27%), and then by 10 pitch Courier (21%).

Eighth, when typing photographic copy, type on non-bond paper such as duplicator or copier paper. Place one or two sheets of backup paper behind the sheet being typed so as to obtain uniform impressions. If you prepare "tape-up" or "paste-up" artwork to photograph, make a photocopy first and photograph that instead.

Ninth, a daisy wheel printer or a laser jet printer used with a word processor can make excellent letter quality work for photographing if printed on non-bond paper. The paper should be free of water marks as these may reproduce and degrade the background color. Using the "Bold" setting on some electronic typewriters or word processors also gives added density to the characters to be photographed.

Processing

Simply have the film developed by a commercial developer using Kodak C-41 processing, the same process that is used to develop color prints. (Do **not** have the film developed with E-6 chemistry; doing so will ruin the film.) Some commercial film processors have been encountered who must be convinced that the film should be developed with C-41 chemistry. It may be helpful to take the information sheet that comes with the film to processors to show them that the film is to be developed using the C-41 process. Kodak C-41 processing kits are also available for home developing, if desired. However, the convenience and rapidity of the one-hour or overnight commercial processing available today in most university communities is a factor that must be considered.

Can you vary from black-and-white copywork?

You certainly can. Be creative. Experiment! Bracket exposures. Try combining pastel-colored background paper with white background paper to provide visual emphasis in a series of "progressive disclosure" slides. For example, using both canary yellow and white in copywork for a title slide with a #25-A (red) filter will result in a slide with both pale turquoise and dark turquoise in the background. Using typed words and ball point pen ink in the same copy layout will give different line colors. Using pink or yellow Carter's "Hi-Liters" on the copy before taking the slide will also highlight material. Try different approaches, but keep a record of what works so that you can duplicate the results as needed.

Summary

The two techniques descrived to produce textual, graphic, and title slides, namely, 1) photographing off a microcomputer's screen or 2) photographing printed copy using Vericolor S0-279 slide film, are very useful for university faculty in agriculture. Both are easy to use and produce slides quickly. The process using S0-279 film and typewritten or word processor printed copy results in slides of the best quality. For persons not having access to good personal computer programs, it is also the cheapest, with slides costing between $.31 and $.54, including processing.

Users need to examine their individual circumstances and select the appropriate option. Both have much potential for improving the quality of visuals used in meetings, seminars, and presentations.

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Student Assignment: Classroom Poster Presentation

Alan C. York

The Idea Sharing sessions of the 1984 NACTA Conference used posters for the first time while the Entomological Society of America, my own professional organization, has had posters as a part of its formal conference for about a decade. The popularity of posters is evidenced by the increase in numbers of such presentations from 94 in 1984 to 124 in 1985. Internationally, entomologists at the XVIIth International Congress of Entomology (Hamburg, Germany, Aug. 1984) used a total of 268 poster presentations. Recently, I observed on a trip to China that many research stations also presented their research methodology and results to us through the medium of posters.

Poster presentation has been widely accepted as an effective and efficient method of graphically communicating data from science and technology. The use of posters does not relegate oral presentations to a lesser position, nor do I think the number of oral paper presentations at scientific meetings will decrease

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