The Oklahoma Cooperative Extension Service
Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.

- It is administered by the land-grant university as designated by the state legislature through an Extension director.

- Extension programs are nonpolitical, objective, and research-based information.

- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.

- It utilizes research from university, government, and other sources to help people make their own decisions.

- More than a million volunteers help multiply the impact of the Extension professional staff.

- It dispenses no funds to the public.

- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.

- Local programs are developed and carried out in full recognition of national problems and goals.

- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.

- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

The Volunteer Teacher Series:
Do-it-yourself Visuals

Renée Daugherty Ph.D.
Extension Education Methods Specialist

Visuals – Helpful Teaching Tools

Effective visuals help volunteer teachers explain concepts. Visuals increase learning in the following ways:
- Visuals help to focus the learner's attention on what is being taught.
- Visuals help people remember. Showing a word or object as you talk about doubles the effect of your teaching.
- Visuals help to clarify the concepts you teach. Pictures can explain some concepts better than words.

As a volunteer teacher, your concern is how people learn and remember.

Learning. Anthropology, the study of man, tells us that about 85% of all the information we receive occurs through vision. This includes reading, seeing demonstrations, seeing pictures and drawings, and observing daily life. About 10% of learning occurs through hearing. This includes lectures and public speaking, hearing instructions on how to do something, and listening to everyday happenings. Taste, touch, and smell account for the rest.

Remembering. Your goal is to teach so that people remember and apply what they learn. As you choose the teaching methods and visuals you will use, refer to Edgar Dale's "Learning Cone of Experience." Use the list as a guide to prepare your lesson (see Figure 1).

How People See

Youth and adults with normal health depend more on vision to learn than any other sense. Studies show that 85% of learning occurs through vision. Since vision contributes so much to learning, it's important to understand what affects how people see.

Visual acuity. Change in vision occurs throughout our lives but it is very gradual due to the density of the lens. As people age, there is a steady decrease in the average acuity or sharpness in vision, even in healthy eyes. Although clarity peaks around 18 to 20 years of age, declines begin in youth. Around age ten, the distance at which people can see an object clearly be-

People Generally Remember

10% of what they *read*
20% of what they *hear*
30% of what they *see*
50% of what they *hear* and *see*

70% of what they *write*
90% of what they *say as they do* a thing

Read
Hear words
Watch still pictures
Observe moving pictures
Observe an exhibit
Observe a demonstration
Do a site visit
Do a dramatic presentation
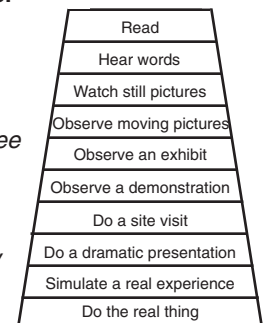Simulate a real experience
Do the real thing

Figure 1. Dale's Learning Cone of Experience.

gins to move away. People begin to notice the change around 45-55 years of age.

What does this mean for your teaching? Choose visuals with lettering and figures of ample size for your audience. Keep drawings simple and uncluttered – tiny details can be confusing. The "Designing Visuals" section of this publication will give additional tips.

Light / Glare. As we age, the pupils in our eyes let in less light. This results in a decreasing ability to adapt to the dark. It also makes eyes more sensitive to glare, so avoid reading or showing visuals using a single lamp in a dark room. Glare can also arise when environments are too brightly lit. Up to about age 20, we need 100 watts of light to see effectively. The amount increases up to about 180 watts for persons around age 50. Illumination on what you are reading should be about three times brighter than the rest of the room.

What does this mean for your teaching? Check the lighting in the room where you will teach. If you're meeting in someone's home, cooperate with that person to use light bulbs with higher wattage. Display visuals in the part of the room with the best lighting, or move lamps or furniture as needed. If your meeting place has poor lighting, move to another site if possible.

Visual recognition. The eye's ability to recognize

what it sees declines with age. In particular, the speed with which it recognizes things is slower.

What does this mean for your teaching? Display visuals long enough for learners to recognize them and focus on them clearly. Use an easel to support non-projected visuals and keep them steady.

Contrast. At any age, people see better when visuals have *figure-ground contrast*. Visuals should be set apart from the background to appear more distinct. Dark figures show up best on light backgrounds, and light figures show up best on dark backgrounds. This applies whether the visual is a demonstration model, a picture projected onto a screen, or words on a page or poster. The need for good visual contrast increases with age.

What does this mean for your teaching? Use contrasting colors when preparing visuals. Display items against a plain background so details can stand out clearly.

Focus / Accommodation. Accommodation is the ability of the lens to focus and maintain an image. In the middle adult years, most people will experience difficulties in near vision tasks such as reading. As early as age six, the ability to focus on objects both far and near begins to decline. The decline continues to age 60 and levels off until about age 75. The loss of elasticity in the eye reduces the ability to focus, especially to change focus rapidly. Also, the older we get, the more difficult it is for our vision to adjust to objects close to the eye.

What does this mean for your teaching? Select or make visuals as large as possible. Use an easel or display to steady the visual and minimize movement. When demonstrating something, use smooth, deliberate movements so the learners can follow the action more clearly. Be sure letters and figures on visuals have clean lines and edges. If you provide photocopied handouts, use clean originals with crisp type.

Color. Around age 35, there are changes in the way eyes handle color. The lenses tend to yellow slightly with age, which makes it more difficult to register the color blue; therefore, more blue light is needed to get the sensation of blue.

What does this mean for your teaching? Use colors that contrast well (see the list in this publication). If you color code items for elderly audiences, allow for potential difficulty in distinguishing between pale blue and pale green. Choose shades of blue with a little more intense color, but if you use that blue paper for printed material, it must be light enough to provide good contrast with the text on the page. Some blue and green combinations may not be legible at all. Try this experiment: print green letters on a light blue background; place it alongside amber or brown letters on a light yellow background. Notice the difference.

Selecting Visuals

Choose visuals appropriate for the learners and the topic you're teaching. The best teaching aid is the real object or experience itself (see Figure 1). When you can't use the real thing, a model is the next best thing. Moving pictures are the next choice.

When the items above aren't available, simple visuals make good teaching aids. Simple visuals include still pictures and written words. You can choose from several types, such as:

posters	overhead transparencies
flipcharts	electronic presentations
flat maps	photographs and slides
drawings	charts and graphs

Use drawings when a photograph or slide of the real object is not available. Line drawings are a good way to simplify a concept. Charts and graphs show comparisons or proportions, such as comparing the volunteer teachers in your organization by age group or gender. Drawings, charts, and graphs can be prepared on posters, flipcharts, slides, overhead transparencies, or electronic software. Real objects can be photographed for use in photos, slides, overhead transparencies, posters, and electronic presentations.

Images that are smaller than approximately 8" x 10," such as photos and real objects, should be enlarged or projected for groups larger than 5-7 persons. Flipcharts and posters are appropriate for groups of up to 30 people (see Figure 2). Projected visuals such as slides, overhead transparencies, and electronic presentation software work well with groups of 10 or larger.

Designing Visuals

Your goal is to develop and use visuals that allow learners to direct their mental efforts toward understanding your message, rather than wasting their time trying to make sense out of what you are showing to
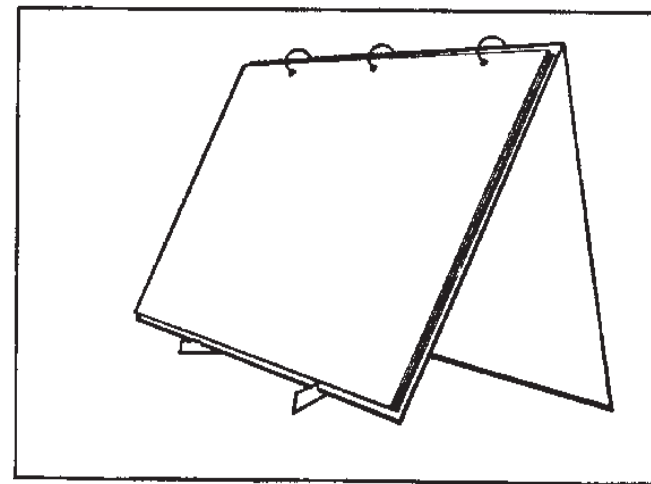

Figure 2. Flipchart.

Practice What You've Learned about Making Visuals

Your skill in making your own visuals will improve with practice. Remember, effective visuals increase learning and retention, while poor visuals can confuse and distract the learner and be a barrier to learning. Plan well and consider your learners as you design and prepare visuals.

As a volunteer teacher, you'll learn more from the lesson because you've taken the care and time to teach it effectively. Enjoy the experience of learning and helping others learn, too!

References

Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (2002). *Instructional media and technologies for learning* (7th Ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Hill, J. (March, 2001). The charting game. *Presentations* 15(3), 50-54.

Hoyer, W. J., Rybash, J. M., Roodin, P. (1999). *Adult development and aging* (4th Ed.). Boston, MA: McGraw-Hill.

Fact sheets in The Volunteer Teacher Series

T-8201   The Effective Volunteer Teacher
T-8202   Teaching Adults
T-8203   Do-it-yourself Visuals

Suggested Readings

In addition to the References, the reader will find the following to be worthwhile sources on making simple visuals.

Creative Training Techniques, a monthly newsletter of tips, tactics, and how-to's for delivering effective training. Published by Lakewood Publications.

Presentations, a monthly journal of technology and techniques for effective communication. Published by VNU Business Publications USA.

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them. A visual cannot do its job unless the words and images can be seen clearly. You have probably heard many a presenter say "I know you can't see what's on the screen [or flipchart] so I'll read it to you." The goal of good visual design is to remove as many obstacles as possible that might impede transmission of your message. As you design and prepare your visuals, consult these six tips:

1. **Understanding** – Visuals should have a point. Organize ideas so they make sense and flow logically, asking yourself "What do I want people to learn?" If the visual has a title, it should be at the top. The center of interest goes in the top third of the visual, since we read from left to right, top to bottom. Use familiar words. If you use a new or technical term, print it clearly and correctly. Organize items or points in list form instead of paragraph form – it's easier for the learner to follow.

2. **Simplicity –** Limit each visual to one or two ideas. Use more than one visual if you have several points. Use few words. Short phrases are better than complete sentences. Remember the KISS principle: Keep It Short and Simple.

3. **Neatness –** Keep visuals neat and clean. Smudges and soil can make a visual hard to read. Make visuals in a clean area using clean hands and materials.

4. **Color** – Use color to do the following:
   - attract attention
   - emphasize a point
   - show emphasis or contrast
   - set a mood
   - identify something (such as green for 4- H)

   Use only to two or three colors on a visual featuring lettering, including the background color. For posters and flipcharts, use bold colors on a neutral background.

5. **Readability and Legibility** – There are several things you can do to make your visuals easier to read.

   Use readable colors. Contrasting colors make visuals easier to read. The following list gives color combinations with good contrasts. All are good choices.

Black on yellow	Green on white
Red on white	Blue on white
White on blue	Black on white
Yellow on black	White on red
White on green	White on black

   Use open space. Good margins and open space make visuals easier to read. It's difficult for the eye to focus on pictures or letters that go all the way to the edge, so allow open space on the visual, both around the border and within your message. Avoid clutter. Openness makes reading text or understand-

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ing a picture easier. Allow a border of two to three inches on items to be seen from a distance, such as displays, posters, or large flipcharts. On visuals 11 x 17 inches or smaller, use margins of 1.5 to 2 inches.

Use readable letters and typefaces. Use lowercase letters on your visuals, adding uppercase (capitals) only where required. Limit the use of words in all uppercase letters to short titles or headings. Phrases of more than three words and full sentences should follow the rule of lowercase lettering. Uppercase letters are all the same height and have fewer visual cues to distinguish one another than lowercase letters, and are therefore harder to read.

Choose printed lettering rather than cursive, whether you do the lettering by hand or use commercial or computer lettering. Printed letters are easier to read than cursive handwriting.

Choose a style of lettering that harmonizes with your visuals. Plain, non-decorative lettering style is recommended for straightforward informational or instructional purposes. A **serif** style, such as Times Roman, has a fine line projecting from the main stroke of a letter (actually used in this publication). A **sans serif** style, such as Arial or Helvetica, has no ornamentation. It is recommended that you use sans serif typefaces for projected visuals, displays and flipcharts and serif typefaces for printed materials such as handouts.

The thickness of the letter strokes can make a difference in readability as well. Some typefaces (especially serif typefaces) use thick and thin strokes – from a distance, the thin strokes can be difficult to see. For your visuals, choose a typeface or style of printing with solid, even strokes (See Figure 3).

Arrange letters to make readable words. Print words across the visual, not up and down or diagonally. Space letters and words so they're easy to read – not too spread out or too close together. Equal distance between all letters won't always yield readable words because letters have different shapes (see Figure 4).

Figure 3. Examples of serif and sans serif type faces.

Good **Poor**

WAVE | | |

Figure 4. When using stencils or rub-off lettering, make sure letters are spaced properly. Allow for the shape of the letters

Space words, sentences, and lines properly. Allow one and one-half letter widths between words and three widths between sentences. A letter width is the width of the lowercase letter "m". For example, if the lower-case letter "m" in the lettering you're using is one-half inch wide, allow three-fourths inch between words and one and one-half inches between sentences. Electronic presentation software should default to proper spacing between letters and words, but some allow for overriding the default and compressing the letters – avoid the temptation to compress. Also, allow appropriate space between lines of text for readability (see Figure 5).
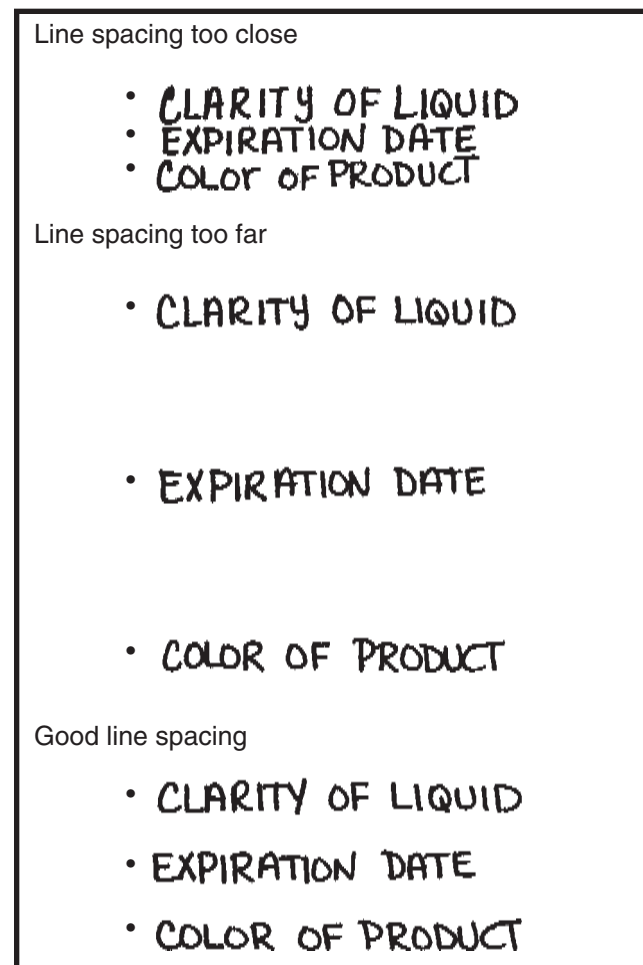
Line spacing too close
- CLARITY OF LIQUID
- EXPIRATION DATE
- COLOR OF PRODUCT

Line spacing too far
- CLARITY OF LIQUID

- EXPIRATION DATE

- COLOR OF PRODUCT

Good line spacing
- CLARITY OF LIQUID
- EXPIRATION DATE
- COLOR OF PRODUCT

Figure 5. The example above show the message on three hand-lettered posters. Notice how the line spacing makes a difference in readability.

6. **Size** – Letters, as well as details in pictures and figures, should be large enough to be seen clearly by learners in the last row. The smallest letter or important detail should be at least one-half inch tall for every 10 feet of distance that the visual is from the learner. For example, a learner sitting farthest from your visual is 30 feet away; for that distance, the lowercase letters on your visual should be at least one and one-half inches tall. Of course, you may use letters larger than that, too. Remember to consider the age and vision characteristics of your learners.

The same rule of height applies for projected visuals – the projected letter should be at least one-half-inch tall for every 10 feet of distance. However, the actual projected height will vary depending on the projection equipment and how it is positioned in the room. An overhead transparency or electronic graphic presentation that projects to an appropriate size in one setting may not work in another. Moving the projector away from the screen will enlarge the image, but you may not be able to move it back far enough due to screen size, length of power cord, and the equipment encroaching into the learners' seating area. It is recommended that you use a minimum of a 24-point typeface in anticipation of varied projection situations.

Planning Checklist

As you plan your visuals for a certain audience and purpose, consider the following points:
Cost — Is the visual economical as to cost and use of the materials selected? As to the time and effort of the person or people needed to make it?
Usefulness — Is the design practical and portable? Can and will you use the visual more than once? The more use, the more economical the visual.
Message — Is the message on target for the audience and purpose? Is it informative or educational?
Style — Is the style of design appropriate for the audience? For the time the visual is to be used? Place? Subject?
Honesty — Is the message accurate and truthful? Believable?
Simplicity — Is each visual limited to one or two main ideas? Do the visuals contain unnecessary messages or art that complicate and clutter the main idea?

Follow Up Checklist

After you've made your visuals, critique them with the following points in mind:
Visibility — Does the visual stand out from its surroundings? Do the colors attract the viewer's attention and hold the eye?

Readability — Is the visual easy to read? Is the lettering style readable? Is the color of the lettering easy to read against the background color?
Layout — Do the text and art in the visual flow well? Are they grouped in a sensible way? Is there pleasing open space?

Using Visuals to Teach a Lesson

Visuals increase the learner's understanding. Follow these tips when you use visuals:
1. Visit the meeting site in advance when possible. Plan your visuals accordingly.
2. Arrive early for your lesson. Allow time to organize your materials.
3. Place visuals where everyone can see them clearly. Arrange chairs so that you and the visuals are in clear view. Use an easel, wall, or other object to keep the visuals high enough so all can see them.
4. For non-projected visuals, be sure your visual is well lit. Rearrange furniture or lighting if necessary. Remember, the visual can't do its job if people can't see it clearly.
5. For projected visuals, control ambient lighting so the room is not too bright. Also, there can be glare from the projected visual if the room is too dark, so allow some light in the room from another source, if possible.
6. Check for glare. Position your visuals then look at them from different parts of the room. Does the lighting cause a glare? If so, adjust the lights or tilt the visual forward or backward a bit to change the angle.
7. Practice your lesson until you are comfortable with using and handling the visuals.
8. Hold visuals steady. Use a wall or easel to support them.
9. Hold a visual up long enough for all to see it clearly.
10. Talk to your audience, not the visuals. Glance at the visual if it helps to remind you of the next point you need to make.

The Visuals Kit

If you often volunteer to teach, you'll find the following supplies useful to prepare visuals on paper and poster board. A tool box or zip-top bag is a handy way to organize the small items.
- newsprint tablet or flipchart easel pad (*for flipcharts and posters*)
- regular transparent tape
- removable transparent tape (*for guidelines when lettering*)
- masking tape
- markers in black, red, green, and blue (use markers with tips one-fourth inch wide since felt tip pens make lines that are too fine to be seen from a distance)

- large markers (which make a stroke about five-eighths inch wide)
- ruler
- snap-off blade cutter or box knife (*to cut poster board*)
- rubber cement or a glue stick (*to mount photos or other visuals*)
- 10" shears
- pencil
- black pen

You can find these items at office supply and hobby stores. Discount variety stores carry some of the items, too. Costs run about $40-60. You may belong to a group that could share the visuals kit – the group could buy the supplies and pass the kit around to the volunteer teacher.

Make Your Own Easel

It's easy to make a table top easel from poster board or a cardboard box.
Poster board easel (see Figure 6). Enlarge the pattern to a suitable size. Following the solid black lines, cut the outline of the easel out of corrugated cardboard or poster board. From the back side of the board, score the board along the dashed lines – be careful to cut only halfway through the thickness of the board. Fold the wings of the easel to the front along the dashed lines.

Cardboard box easel. Draw a pattern on two adjoining sides of a cardboard box as in Figure 7. Use a sharp blade to cut through the cardboard along the lines. The cutout portion makes a self-standing easel.
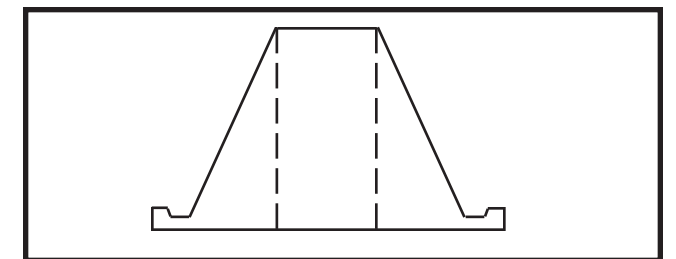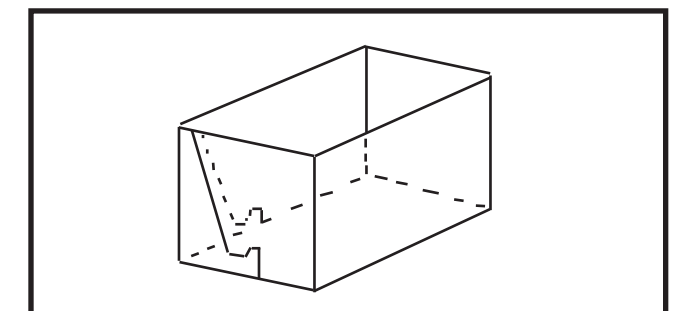
Figure 6. Poster board easel.

Figure 7. Cardboard box easel.