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SUGGESTIONS FOR CHART MAKING

It does not seem that it should be necessary to put forth any argument for the use of visual aids in teaching. In this age of motion pictures, illustrated magazines, and billboards it is abundantly evident that the mind is impressed to a very considerable extent through the eye. Not only are impressions made through the medium of sight extremely vivid, but experiments have shown that these impressions are retained for a considerable length of time as compared with impressions received through other senses. It is probably not wise to claim that all matters may be better presented visually than otherwise, but it is safe to say that most teaching can profitably make use of visual aids as a supplement to the spoken or printed word.

Altho common knowledge and scientific experiment have shown the above statements of the value of visual aids to be true, it is reported authoritatively that agricultural teachers are not using them as much as they should. It may be that chart use in particular is restricted because of lack of information on chart making. It is with the hope of being of assistance in this matter that this article is presented.

Within the field of visual education one of the most useful and practical means of teaching through the eye is the use of charts. This subject will be discussed at this time, leaving for a later issue such subjects as use of the blackboard, the lantern slide, outline maps, and moving pictures.

The topic of "charts" naturally divides itself into two parts, chart making and chart use. For the sake of clarity it may be well to divide the discussion on this basis and outline at this time only the principles and practice of chart making.

Classification

Before taking up the details of the making of charts it will be necessary to classify them in several different ways. First, on the basis of permanency, charts may be classed as temporary,

to be used once or a few times and discarded; and permanent, to be retained for use over a considerable period of time. The second classification is closely related to the first, being based upon the kind of material (physical) of which the chart is made. Such material may be either cheap paper, more expensive paper, card board, heavily sized cloth (Linura), high grade cloth (pequot musin), or oilcloth. Still a third classification might be made on the basis of the means used in putting the matter to be visualized on the background, i.e., pencil, crayon, pens with ink, brushes with inks and show card colors, or rubber stamps. Another grouping might be made: graphic, tabular, or statement charts. Many other classifications could be suggested based on size, special use, and character of material presented. This paragraph has suggested enough, however, that the future discussion should be clear.

Fundamental Principles

In all chart making there are certain fundamental principles that should serve as a guide. Some are more important than others, but a chart which does not embody the most of them is likely to fail in the purpose for which it is made. These principles are so simple and practical that a listing of them here should be sufficient—They are:

1. The work must be neatly done.
2. The chart must present but one idea or teaching point.
3. The meaning must be clear.
4. The material must be legible to the audience.
5. The material must have "punch."

The above principles may be looked upon as objectives to be attained in making any chart. As steps to be taken in reaching these objectives, the following may be mentioned.

Neatness

Neatness requires that the background be clean, of uniform color, of rectangular shape, and free from wrinkles. Erasures particularly show up badly. Material must be well balanced. Crookedness of lines; mixing of slant, back hand, and vertical letter-

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ing; many punctuation marks, and promiscuous coloring will all detract from the appearance.

One Idea Only

The one idea or teaching point may be made plain by underlining, larger lettering, or setting off from the rest of the material. All that appears on the chart should point to just one idea. Indenting or outlining will often serve the purpose.

Clearness

A good rule to follow in planning a chart is to see if it will answer the questions what, when, where, and possibly who, how, and why. If the chart will do this, its meaning should be clear. Simple language should be used and but little left to the imagination. Ambiguous statements must be especially guarded against.

Legibility

Legibility may be secured by using letters of the proper size for the distance from the chart to the farthest one in the audience. Simple vertical block letters printed on a white background in heavy black ink are the most legible. Glossiness of background or letters will cause blurring owing to high lights. Words made up entirely of capital letters are usually most easily read at a distance. Spacing between words and lines must be sufficient that the divisions are easily noted. No more punctuation marks should be used than are absolutely necessary to make the meaning clear. The chart must be presented in such a way, as far as light and height are concerned, that every one in the audience will be able to see all of it.

Attractive

There are several ways of securing appeal or "punch" in the chart itself. Material should be arranged to focus attention where it is wanted. Wedge-shaped arrangement is the main scheme for accomplishing this. A careful use of color will help, tho extreme care must be taken here. A startling statement (if true) or a new way of presenting an old truth will often serve to arouse interest.

Materials

If chart making is to be carried on to a reasonable extent there are a few ing inks in several colors, black and equipment which should always be on hand. For backgrounds, wrapping paper, bristol board, and mus in are most commonly used. Wrapping paper is cheap and is satisfactory for temporary charts. Three-ply bristol board in sheets 20x28 inches is excellent for a small amount of data, and will keep in good form. The best grade of muslin makes satisfactory charts and can be secured in several widths. For putting the material on the charts there will be needed draw-colored crayons, and cloth and paper stamp-pad inks. Black gummed letters are now available in several sizes and make an attractive chart. If much variety in color is necessary, show card inks may be used. In applying these materials, spoon-bill pens in several sizes (1-5) will be needed and also bowl point, shading and lining pens, camels hair brushes, and rubber stamps.

Chart Board Helpful

When making cloth or large paper charts it is convenient and almost necessary to have a chart board. This must be as wide as the charts to be made, a perfectly plain surface, of soft wood so that thumb tacks will penetrate readily, and equipped with a good adjustable straight edge. The board may be made of wallboard cleated on the back to prevent warping. It is helpful to have guide marks on each end, spaced an inch apart. This will simplify the making of straight lines.

The adjustable straight edge may be made by using a four- or five-inch board of one-half inch thickness and the length of the chart board. On each edge an inch and a half from the end, put in a medium sized screw eye. Run a piece of window cord through the screw eye at each end of the straight edge and fasten the ends of the cord

securely to the top and bottom of the chart board an inch and a half from the edge. The friction of the rope on the straight edge will hold the latter in any desired position.

Planning

With all charts it is necessary to plan carefully before starting the work of making. It is necessary first to settle definitely the purpose or aim in view in using the chart and then to decide how best to attain that aim. The amount of data to put on, the material to be used, the size and kind of lettering, the spacing and balancing should all be accurately figured out before putting a line on the chart.

When this has been done, the materials to be used should be laid out in convenient position. Thumb tacks, cloth or other background, inks, crayons, pens, brushes, rubber stamps, stamp pad, rulers, large triangle, and cleaning cloths should all be ready. If a cloth chart is to be made, the cloth should be placed properly on the chart board. The most satisfactory way of doing this is to tack the upper right hand corner first near the corresponding corner of the board. At the bottom of the right hand side and stretching slightly, tack the cloth to the board the same distance from the edge as is the upper corner. Drawing just enough to pull out the wrinkles, tack the other two corners in line. Then, beginning at the middle of the edges, tack all sides free from wrinkles, placing tacks from six to eight inches apart. Excessive stretching will cause crooked lines and figures when the cloth is released from the thumb tacks.

Type Sizes

Using the straight edge and ruler, lay off the spaces for the data to be presented. Most work on cloth charts will require only rubber stamps and crayons. The letters of any one set will be uniform in height but will vary in width as "I" and "W," so that this must be considered in planning the number of letters that will go on any one line. Rubber stamp sets suitable for chart making are made in 1, 1¼, 2, 2½ and 3 inch letters. The three inch letters make satisfactory titles; the 1 inch for unimportant figures, footnotes, or small column headings. If but two sets are to be had 1½ and 2 inch letters should be purchased. Pneumatic or sponge back letters should be used, as they lead to better work. Cloth ink should be

used on muslin and paper ink on the other backgrounds.

In working with rubber stamps it is helpful and often prevents a mistake, if the letters to be used on a line are first laid out on a table in proper order and with spaces between words allowed for. The letter to be put on the chart next is in the corresponding position on the table, and if care is taken to keep it right side up, no mistakes should occur. There is no neat "cure" for mistakes in ink work, so prevention is important.

The ink pad should be moist but should show but little "free" ink. The letters should be patted on the pad, never rubbed, until covered uniformly. The bottom of the letter should then be rested on the straight edge and pressed firmly against the cloth. With the pneumatic type it is possible to wiggle slightly without blurring the outline, thus helping to get all parts of the letter against the cloth. Pull away straight and place letter in line or back in the box.

Rules for Spacing

Spacing is a big factor in legibility. A good rule is as follows: between letters leave a space equal to 1/3 or ½ a "B," between words leave a space equal to "B," between sentences leave a space equal to two "B's." Between lines leave a space not less than the height of the letters used in the lines. At the top and bottom of the chart a space from four to six inches should be allowed and at the sides not less than two inches.

When lines are to appear on the chart, such as column divisions, drawings, or bar graphs, the best material to use is wax crayon or "crayola." For narrow lines the crayon should be sharpened to a point and rotated while drawing so that the line will maintain the same size throughout. For broader lines the crayon may be sharpened to a wedge shape of any width desired.

For best results in cloth-chart making two additional steps are now desirable tho not absolutely necessary. All crayon work should be melted in by ironing with a hot iron. Lay the chart face down on blotting pads or unglazed paper and iron until the wax is melted into the cloth and the surplus is taken up by the paper. Now replace the chart on the board and "fix" it. This process consists of coating the of a small hand sprayer, thus insuring aration which prevents the smearing of the ink and also gives a slight stiffness to the chart. It is best put on by use

of a small hand sprayer, this insuring an even coating in the form of a very fine spray. After this has dried the chart is completed.

Considerable practice is necessary in using pens and brushes. No special instructions can be given here. In general, progress of work should be from the top down, thus avoiding danger of rubbing over. A medium amount of ink on pens and brushes will make neater work and less trouble. This is especially true of paper backgrounds.

Sources of Materials

It may be helpful to list here the more important materials needed for chart making and where each may be obtained.

Buck's pneumatic rubber stamps—W. M. Welch & Co., Chicago; Central Scientific Co., Chicago.

Stamp pad inks (paper and cloth)—Office supply stores

Chart board and guide—Shop made Bristol board—Office supply houses

Pequot muslin—Drygoods stores

Fixatif—Art supply houses

Waterproof drawing inks—Drug or stationery stores

Pens and brushes—Art supply houses

It should be clearly understood that the making of cloth charts means considerable work and expense. They should be made up only when the data presented is valuable and when it will remain usable over a period of years. Emphasis should be placed on charts made on a paper background and requiring little time and inexpensive equipment. Bristol board is cheap, takes ink well, presents a neat appearance and is adaptable for use of students in their own work.*

Make more charts and use them.

S. D.

* A later issue of The Visitor will contain examples of paper charts made and used by the students in one of our high school agricultural departments.

SLIDE SETS AVAILABLE

In checking up on the use made by agricultural instructors of the slide library of the Division of Agricultural Education, we find that these sets are lying idle too much of the time. Only a few men are requesting slide service in any extensive way. Some others are asking for sets only once in a while.

This is a teaching opportunity which should not be neglected. Most of these slide sets have been very care-

fully worked out. The photography is good and the lesson is well presented. A judicious use will always help by making points more vivid and lending variety to the method of presentation.

According to a study made in 1920, practically all departments in the state are equipped with projection lanterns. They should be used, and frequently. The department should gradually build up a set of lantern slides which the instructor finds most valuable. Slides may be easily made by the instructor or students. They are particularly valuable for showing tables, summary statements, or graphs.

Sets of slides are loaned to high school agricultural departments for periods of a week. They may be had for a longer time under special arrangements. The best plan is for the person desiring the use of the slides to plan ahead two or three months and make a request for certain sets for certain weeks. If there are no conflicts, his name is entered on the records for the set and time requested. Sets are usually sent by express, and are shipped from University Farm the Friday before the week they are to be used. There is no rental charge. The person borrowing pays the transportation charges both ways and is responsible for breakage or other damage. It is necessary that the shipment be returned immediately following use, so that others wishing to use it will not be inconvenienced.

Enclosed with each set is a post card. This is to be filled out, showing the number of times the set was used, the total attendance, and the nature of the use.

The following is a complete list of slide sets which are available at University Farm. Most of these have been placed here through the courtesy of the International Harvester Company. The subjects are:

Alfalfa	Livestock
Agricultural	Meat Packing
Development	Hogs
Corn	Horses
Canning	Oats
Dairy	Soils
Dairying	Sheep
Education	Poultry
Fly	Weeds
Gardening	Boys' and
Extension	Girls' Clubs
Gardening	

Please make use of this service. It is entirely for your benefit. We shall be glad to have your suggestions as to improvement.

S. D.