The Overhead Projector . . a Teaching Aid

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The overhead projector has a 10″ x 10″ horizontal glass stage upon which the material to be projected, the transparency, is placed. The transparency can be any tranparent plastic sheet upon which are printed, pasted or developed figures and images. Each figure or image must either absorb or dispense light. A vertical light beam (500 to 1000 watts) originating from beneath the stage casts the image into a lens mounted about 18" above the stage. This overhead lens permits focusing and also projects the beam upward and to the rear of the projector. Th resulting beam produces a uniformly bright-screen image, so bright that normal room lighting does not reduce clarity.

From the above description, it is obvious that the overhead projector was designed to be operated from the front of a lecture room. Thus, the operator reads the transparency on the stage exactly as the student views it on the screen. Of course, the projector must be kept low enough to prevent blocking of the student's view. The screen should be matte and white in order to obtain up to sixty degrees of effective viewing angle. Generally, it is most convenient to place the screen to the left of the students (for a right-handed instructor) or above the chalkboard. The screen should be tilted forward slightly at the top to prevent "keystoning" of the projected image.

Preparation of Transparencies

There are a host of commercial materials suitable for the preparation of transparencies. The following four examples are taken from my own experiences and are not meant to be exhaustive.

1. Grease pencil drawings are made on clear 8-1/2″ x 11″ acetate sheets. If desired, color can be added by use of "magic markers." If reprocessed untinted x-ray films are obtained, no cardboard mounting frames are necessary. Smudging is not a problem so long as the finished films are stored with a tissue-paper protective covering.
2. Prepare drawings with Acetograph pens and inks on reprocessed untinted x-ray film. Use pressure-sensitive tapes of varying colors, widths and designs to highlight curves on graphs, to represent process lines on flow charts, etc. Whole areas can be highlighted by use of overlays cut from colored film.
3. Copy (reproduce) printed material from books, periodicals, advertising literature, etc. While many different copying processes are commercially available, the best procdure at any given school will depend upon available equipment. For example, if a page in a book is to be reproduced, the page might first be "lifted" by preparation of a Xerox copy. The Xerox copy can then serve as an "original" and from it a positive transparency can be made directly, e.g. on Thermo-Fax standard positive type 123. It might also be noted that Xerox copies of transparencies are generally excellent. By this means, borrowed transparencies can be copied easily.
4. Colored transparencies can be "lifted" from clay-coated color prints in magazine illustrations (e.g. those in Fortune magazine) onto transparency positives (e.g. Thermo-Fax type 123).

Procedures and Techniques.

In the teaching of any course in which equations, tables, diagrams, charts, etc. are developed, presented or discussed, the use of overhead projection will prove effective. All pre-planned chalkboard presentations can be delivered more efficiently and effectively by predeveloped transparencies. Some of the advantages offered by overhead projection follow.

1. There is no lost time writing on the chalkboard. The instructor faces the class and so can discuss directly the subject matter presented on the transparency. Eye contact with the students need never be lost. Teacher-student communication is enhanced.
2. More subject matter can be presented and

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A new continuous motion picture projector is now available from the Technicolor Corporation, 123 South Hollywood Way, Burbank, California. Special 8-mm motion picture cartridge films are being produced for this machine and are available from the National Committee for Fluid Mechanics Films, Educational Services, Inc., 47 Galen Street, Watertown 72, Massachusetts. Since both the projector and the film are special and different from standard motion picture films and equipment, inclusion of this teaching aid in this report is regarded as justified. In the future, additional films will certainly become available and teachers must be on the watch for reference to such teaching aids.

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discussed per unit of class time. The time "saved" can be used for reinforcement of material already presented or for greater coverage of the subject.

3. Transparencies can be filed and so are available to students outside of class, or for later reuse in class.
4. Student home-work assignments prepared on transparencies allow ready discussion before the entire class. (The student is supplied with plastic sheets and a grease pencil when the problem is assigned to him.) By this procedure, more problems can be discussed and the entire class benefits from the resulting exchange of ideas.
5. Use of colored transparencies can make complex material easier to understand. For example, in discussing the "tie-element" concept in chemical calculations, a colored tape will clearly indicate the flow of the tie element through the process. (For greatest impact, this could be presented as an overlay.)
6. Judicious use of color can make otherwise dull material come to life. For example, the various pieces of equipment on a flow sheet can be presented in different colors.
7. Class announcements, surprise quizzes, etc. can be displayed immediately to everyone in the class. Such matters can just as quickly be "undisplayed" by the flick of a switch.

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4. American Optical Co., Instrument Division, Buffalo 15, N. Y. (Projection equipment.)