

TRANSLUCENT SCREEN FOR TEACHING AND TESTING

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In recent years the use of projection material has become an accepted and approved classroom technique. Projected materials are adaptable to any field and their use is to a large extent limited only by the ingenuity of the teacher. The popular use of the thirty-five millimeter camera has given the teacher the opportunity to present material that is not commercially available in 2" x 2" slides.

The projection equipment offered today is extremely versatile, but has some disadvantages which are not conducive to good teaching practices. Funds are not always available to provide more than the barest essentials for slide projection—usually no more than the combination 3¼" x 4¼" slide projector and opaque projector so popular some years ago. A method is here suggested that would eliminate some of the disadvantages of usual projection methods. Particular emphasis is placed upon the use of projected slides in biology-laboratory testing.

The most common objections to the usual methods of slide projection are the necessity of darkening the room, which precludes note-taking by the students; and the necessity of operating the projector from the back of the room, which places the teacher-operator at a distinct speaking and

pointing disadvantage. Any means by which these can be eliminated is highly desirable.

Several methods for improving such adverse situations have been devised, many of which, however, require costly equipment or special installation. The following are some of the methods:

1. The overhead projector
2. Individual desk lights
3. Special projection rooms with ceiling spotlights
4. Special screens for use in lighted rooms
5. Partial darkening of the room
6. Use of a commercial translucent screen

Although the translucent screen has been used successfully in industry and advertising, Kinder (1950) feels that it has little value for school use because it is limited to situations in which the group members are both near and directly in front of the screen. However, the screen suggested in this paper has actually been viewed by classes of 35 to 40 students. The viewing angle for some students was as little as 28 degrees. The maximum viewing arc is about 122 degrees. The students had no viewing difficulties whatsoever and reported that they could see details clearly from 25 feet. The classrooms in which the apparatus has been used were 26 feet wide and varied in length from 25 to 35 feet. There is

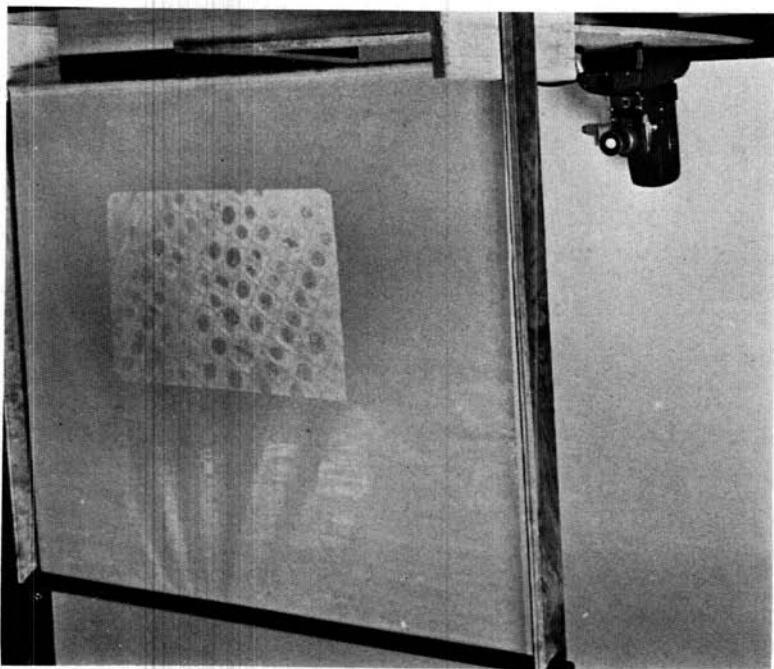


FIG. 1.—The translucent screen in operation.

little distortion at a close viewing distance and the transmitted light is soft enough to cause no discomfort to the eyes.

An inexpensive and very satisfactory screen can be made from drafting linen. This can be obtained in various sizes from civil or architectural engineers. The surface of the cloth may be coated lightly with any inert oil, such as paraffin oil, to improve the light-transmitting qualities. A mineral oil should be used because other oils are susceptible to decay. The treated cloth can then be laced tightly to a frame made of one-by-two inch wood.

Since most projectors come equipped with a five-inch focal-length lens, it is desirable to substitute one of shorter focal length.

The writers have found that a three-inch lens in a projector placed four or five feet behind the screen will give a sufficiently large projection. Since projected images are normally reversed by the lens, it is necessary to reverse the slides when placing them in the projector. This will give a laterally correct image.

The lens represents an investment of twenty to twenty-five dollars, but it is not restricted to this use only. It may be used in all normal projection situations. The cloth will cost about one dollar, and the wood for the frame not more than three dollars. Thus, the total cost of the equipment is less than thirty dollars.

In the classroom, all material ordinarily projected can be used. Since the teacher is operating the pro-

jector, there is no waiting for a slide change, or distracting click in his requesting a slide change. This places the teacher-operator in a good speaking position, and near the screen to indicate specific points on the slide. The room can be illuminated normally.

TESTING

The physical set-up for practical examinations commonly used in the biology laboratory is not generally conducive to the best student performance. Since each student must move about the room answering questions at each of a number of different microscopes, serious difficulties are experienced:

1. Microscope pointers may be moved accidentally.
2. Microscopes may be out of focus.
3. Slides may be bumped.
4. Student's time at each microscope is limited.
5. Students must carry paper and pencil about the room.
6. The best light is available for only a few microscopes.
7. It is difficult for the student to understand written questions.

By using the translucent screen and a microprojector or by projecting photomicrographs, the instructor has full control over the focus of the

slide and the pointer used. The students have more time for each question and do not have to leave their seats. There is always adequate illumination for writing answers, and the instructor can make his questions clear when explanations are necessary. All the advantages cited for use in the classroom also apply to the testing procedure. In addition to this, the instructor spends considerably less time in setting up the examination. Photomicrographs in color or black and white are available commercially at a reasonable price, or more suitable transparencies can be made by the instructor.

The translucent screen can be used successfully in the classroom. It is an inexpensive and convenient method of overcoming the cited objections to the ordinary slide projection situation, the high cost of special equipment, and the undesirable physical aspects of laboratory examinations. The cost of lens and screen is less than thirty dollars, and the screen can be constructed in an evening.

REFERENCE

- KINDER, JAMES S., *Audio-visual materials and techniques*: New York, American Book Co., 1950.