TECHNICAL NOTE

ADMINISTERING QUIZ AND INSTRUCTIONAL MATERIAL
BY OVERHEAD PROJECTION¹

For courses using a contingency management procedure as it was originally designed by Keller (1968), the administration and collection of quiz questions poses no problem because quizzes are scored for one student at a time by one proctor (*e.g.*, McMichael and Corey, 1969). However, for modified programmed course procedures that involve administration of quizzes to groups of students (*e.g.*, Malott and Svinicki, 1969; Stalling, 1971) the distribution and collection of quizzes take time and pose a problem if one wishes to prevent quiz items from becoming part of student files. One solution might be to quiz by means of tape recorder (*e.g.*, Mahan, 1967), but this does not allow students to read questions or re-read portions of them. The present author has used overhead projection to present quizzes in programmed courses and has found the method less expensive and easier to use than other quizzing procedures.

Overhead projectors have been commonly used in traditional classroom instruction to present such things as line drawings and diagrams, and the fact that textual material may be easily prepared to project a clear, printed image may have escaped some teachers' notice. The present procedure is particularly economical and time-saving in courses in which large numbers of quizzes are given to groups of students, but it also has obvious use in presentation of such things as lecture outlines, instructions, and tables.

In the procedure used, quizzes were typed on 8.5 by 11 in. (21.6 by 28 cm) paper using a pica-separation, carbon ribbon IBM Selectric typewriter and the larger letter portion of the IBM Orator Element (see Figure 1). The quizzes were then reproduced on sheets of transparent acetate and projected on a screen at the front of the classroom. Reproduction of the quizzes was done with the 3M Company

Thermofax unit and 3M number 127 (black image) transparencies, a process that requires only a few seconds at a cost of approximately \$0.30 per sheet. Following collection of answer sheets (*e.g.*, IBM 1230 No. 511 for multiple-choice items, or mimeographed sheets with numbered spaces for fill-in items), quiz questions were immediately "redistributed" to students by reprojecting them. This feature of projected quizzing is particularly important for instructional methods involving immediate feedback of answers and discussion of quiz questions.

Visibility of the quizzes was tested using the Bell and Howell 301, a portable unit with light output of 600 w. With the light source 22 ft in front of the screen, quiz items could be seen clearly from a distance of 110 ft, which was at the back of the largest space available for testing the unit. The size of the projected letter images was approximately 3 in. tall with a minimum space of $\frac{3}{8}$ in. between letters (*i.e.*, between two *Ms*). Lighting near the screen reduced clarity of the image, but when these lights were dimmed, virtually any level of available classroom illumination used did not greatly diminish visibility of the quizzes. (A Beseler Co. Master Vu-Graph 7750 with a 1000-w lamp was also tested and produced a somewhat clearer image, but the machine is not easily portable.)

The size of the type produced by the Orator Element is approximately 4.0 mm in height and, for most letters, approximately 2.0 mm in width. If a machine with pica separation, 10 letters per inch, is used (Figure 1), the minimum space between letters is approximately 0.5 mm. Elite separation, with 12 letters per inch, crowds letters, eliminates spaces between some letters, and makes reading difficult unless an additional space is inserted between letters. The Orator Element has additional uses for researchers inasmuch as it can be used for numbering and lettering figures, and the writer has found that figures prepared in this way are acceptable for publication. As can be seen in Figure 1, the type is an unfluted block style, has two sizes of upper case type on the same element, and reproduces well.

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1. RESPONSES PREVIOUSLY REINFORCED ON _____ SCHEDULES OF REINFORCEMENT ARE HIGHLY RESISTANT TO EXTINCTION.

(A SMALLER SIZE UPPER CASE TYPE IS AVAILABLE ON THE SAME ELEMENT.)

Fig. 1. Sample of IBM Orator Element type with pica separation (actual size).

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