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ABSTRACT

A study was made to determine whether or not educable mentally retarded students at the primary and intermediate levels attend to and gain knowledge from filmstrips, or if, in fact, their test performance variance is distributed randomly. The subjects are individually shown a tape-synchronized filmstrip; they are administered both a pretest and a posttest (answers confirmed on posttest only). Overall, the results confirm the research assumption that viewing a filmstrip is related to the subject's performance as measured by criterion referenced items administered in a pretest/posttest design. However, a significant difference in performance is found between primary and intermediate groups. It is suggested that there is an age level or maturity level below which cognitive gain traceable to a mediated presentation may not occur. (Author/WCM)

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Research Report #736
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June 1973

THE EFFECTS OF PRETESTING EDUCABLE MENTALLY HANDICAPPED CHILDREN
IN FILMSTRIP EVALUATION

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SPECIAL REPORT No. 736

COMPUTER-BASED PROJECT for the EVALUATION of MEDIA for the HANDICAPPED

Title: THE EFFECTS OF PRETESTING EDUCABLE MENTALLY HANDICAPPED CHILDREN
IN FILMSTRIP EVALUATION

BACKGROUND

The Computer Based Project for the Evaluation of Media for the Handicapped, based on contract #OEC-9-423617-4357 (616) between the Syracuse (N.Y.) City School District and the Media Services and Captioned Films Branch, Bureau of Education for the Handicapped (United States Office of Education) for the five year period July 1, 1969 through June 30, 1974. The major goal is to improve the instruction of handicapped children through the development and use of an evaluation system to measure the instructional effectiveness of films and other materials with educable mentally handicapped (EMH) children, in-service training and media support for special teachers, and studies related to the evaluation process and the populations used.

The Project has concentrated on the 600 films and 200 filmstrips from the Media Services and Captioned Films (BEM - USOE) depository; however, specific packages from Project LIFE, various elementary math curricula, and selected programs from Children's TV Workshop have also been evaluated. The evaluation model used requires that: 1) objectives of materials be specified and written; 2) instruments be constructed to test and measure effectiveness; and, 3) children be the major sources of evaluation information. A number of instruments and methodologies are employed in the gathering of cognitive and affective data from 900 EMH children and 80 special teachers to make the effectiveness decisions. Over half of the EMH population can neither read or write; therefore, a unique Student Response System (SRS) is employed, consisting of a twenty station G.E.-1000 SRS which can be operated in a group or individual recording mode and is connected to a remote computer system. The computer capabilities consist of remote telephone connections to the Rome (N.Y.) Air Development Command, the Honeywell time-shared network, and the Schenectady (N.Y.) G E Research and Development Center; and batch mode capabilities of the Syracuse City Schools, Syracuse University, and various commercial sources.

In-service and media support activities provide on-the-job training for teachers, teacher aides, equipment, and materials to the special teachers in the city schools. The research activities have centered around investigations and special problems related to the development of the evaluation model. The four major areas considered are: 1) testing effects, 2) captioning effects, 3) special student characteristics; and, 4) evaluation procedures validation.

Documentation of the major activities appear in the five annual reports and the 600 evaluations prepared on materials used. Staff members were encouraged to prepare special reports and the attached paper is one of these. The opinions expressed in this publication do not necessarily reflect the position or policy of the Computer Based Project, the United States Office of Education, or the Syracuse City School District, and no official endorsement by any of the agencies should be inferred.

Research Report 736
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THE EFFECTS OF PRETESTING EMR CHILDREN IN FILMSTRIP EVALUATION

The CBP Evaluation Model for Mediated Materials (Bond, 1972) uses staff developed criterion referenced tests as primary evaluation instruments. Based on the general assumptions concerning criterion referenced test items as measuring progress, it is implicit that the tests actually measure students achievement of mastery of the content of the media. One needs also to assume that the subject will attend to the filmstrip and the content mastery measurement is a result of attention to the film. This study will examine the question: Do the EMR Students at the Primary and Intermediate levels actually attend to and gain from the filmstrips shown or is test performance variance distributed randomly? If pretest to posttest gain is significant, attention is assumed.

The subject population from which CBP draws its evaluation sample is educable mentally retarded children served by programs in the Syracuse City School District. These children are legally defined as having a measurable IQ of 50 to 75 as measured by either the WISC or Stanford Binet. The subject age for the sample used in evaluation model for filmstrips are Primary (CA 6-8 years) and Intermediate (CA 9-12 years).

Problem Statement

The problem is essentially one of validating our assumptions about the effect of the treatment; i.e., viewing a filmstrip - related to the pupils performance as measured by criterion referenced items administered as pretest and posttest. The question is whether student achievement as measured by a criterion referenced posttest is a function of the treatment (i.e., filmstrip viewing) or a function of the criterion referenced pretest. Specifically:

- O₁ Will the subjects show a significant difference in performance on the second pretest as compared to the first pretest; i.e. $O_1 = O_2$.
- O₂ Will the subjects show a significant difference in performance on the posttest as compared to the second pretest; i.e. $O_2 = O_3$.
- O₃ Will there be a difference in the gain between the first pretest and second pretest as compared to the gain between the second pretest and the posttest; i.e. $O_2 - O_1 = O_3 - O_1$.
- O₄ Will there be a difference in the gain between the first pretest and posttest as compared to the second pretest and posttest; i.e. $O_3 - O_1 = O_3 - O_2$.

The null research hypotheses that there will be no difference between the variables formulated and stated in the above questions.

METHOD

Ten Primary and ten Intermediate students were drawn from the available Primary and Intermediate level EBR children at Prescott School, who are normally scheduled for filmstrip evaluation (i.e., N = 20).

The treatment consisted of individual showings to the subjects of a tape-synchronized commercially produced filmstrip, "The Elephant," via rear screen projection using the G.E. AVR 10 as the audio and student response unit and a carousel projector to project the slides onto a rear screen mounted in a student carrell.

The G.E. AVR 10 is designed to allow data collection by requiring the subject to respond by pressing one of five buttons on the unit corresponding to numbered items on test questions projected as part of the filmstrip presentation. The device gives confirming green light for a correct response and red for an incorrect response. Normal procedure is to confirm correct answers. In this study, only answers on the posttest were confirmed.

The data was collected by E. observing the button which the subject pressed and recording the response on a score sheet. In each case, only the first response to a test item was recorded. This procedure was adopted to avoid the variability in responding by a subject randomly pressing response buttons and the inherent problem of machine malfunction with the AVR 10 and the SAS 1,000 data system to which it is connected.

The design is basically a non-randomized control group design.

Primary	O_1	O_2	O_3	$N = 20$
Intermediate	O_1	O_2	O_3	$N = 20$

The subjects will be used as their own control. Therefore, no assumptions need be made about the distribution of the source of variability (Winer, 1962).

The effect of this procedure is to double the sample size; i.e., 20 experimental and 20 control subjects.

The first pretest O_1 was administered followed immediately by the second pretest O_2 . The filmstrip was then shown and the posttest O_3 was then administered. The items in O_1 , O_2 , and O_3 consisted of nine identical criterion referenced items written for this filmstrip as a part of the normal CBP Evaluation procedure.

FINDINGS

Logically, if there was no difference between the first and second observations, but there is between the second and third observations, we can conclude that the treatment; i.e., the filmstrip "The Elephant" had an effect. The t test was chosen over more complex tests to assure that the first order affects were not "washed out" in the analysis (Kerlinger, 1964; Isaac and Michael, 1971).

In order that the assumption be substantiated that posttest performance

is a function of attending to the media, rather than a ~~function~~ of the pretest,

Ho ₁	O ₁ ----- O ₂	<u>t</u>
Ho ₂	O ₂ ----- O ₃	<u>t</u>
Ho ₃	O ₂ - O ₁ = gain	<u>t</u>
	O ₃ - O ₂ = gain	<u>t</u>
Ho ₄	O ₃ - O ₁ = gain	<u>t</u>
	O ₃ - O ₂ = gain	<u>t</u>

Ho₁ and Ho₄ would have to be accepted and Ho₂ and Ho₃ would have to be rejected.

For a t to be significant at the .05 level with 36 degrees of freedom, it must yield a value equal to or greater than 1.69.

The t on Ho₁ yielded a t = .224 and was, therefore, accepted. Ho₂ yielded a t = 2.635 and Ho₃ yielded a t = 2.414 were rejected in favor of the alternatives. Ho₄ yielded a t = .031 and was accepted. Thus the findings support the theoretical hypothesis of the effects of the mediation. The investigators suspected that though the media had been rated as primary that the subjects drawn from the intermediate level population performed significantly different than those drawn from the Primary population. Three additional Null Hypotheses were formulated around the question of differences between the Intermediate and Primary subjects.

Ho_a There will be no difference in performance on O₁ between Primary and Intermediate subjects.

Ho_b There will be no difference in performance on O₂ between Primary and Intermediate subjects.

Ho_c There will be no difference in performance on O₃ between Primary and Intermediate subjects.

H_{0a} yielded a $t = 1.174$ and H_{0b} yielded a $t = 1.87$. At the .05 level for two tailed test with $df = 18$, the t value would have to equal or exceed 1.73. H_{0a} was accepted and H_{0b} rejected. H_{0c} yielded a $t = 2.571$ and was rejected. We may, therefore, logically conclude that the rejection of H_{0c} is a function of the difference in performance between the Primary and Intermediate subjects as measured by the observational instrument. The Intermediate O_1 yielded a $\bar{X} = 4.9$ and $SD = 1.64$ and the Intermediate O_2 yielded a $\bar{X} = 5.1$ and $SD = .83$. The \bar{X} of the Primary sample remained at 4.1 while the $SD = 1.22$ for O_1 and 1.37 for O_2 . Examination of the mean and standard deviation for the two groups show that the Intermediate group acquired more correct responses on O_3 as a result of taking the first pretest O_1 than the Primary group.

Discussion

Logically, we must conclude that posttest performance in this study was a function of the viewing of the filmstrip "The Elephant". One must also conclude that there is an age level or maturity level below which cognitive gain traceable to a mediated presentation may not occur. The question arises as to what effect, sans entertainment, is to be derived from providing mediated material to Primary level educable mentally retarded student.

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