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ABSTRACT

A pilot research study searched for appropriate methods to evaluate instructional television (ITV). The specific objectives were to find ways to measure: 1) the degree to which the media presentation's objectives were being met, and 2) the appeal of the show, as judged by viewers' attention. Five intermediate grade level educable mentally retarded (EMH) students viewed three segments of the "Electrc Company". Three methods attempted to measure the degree to which the subjects learned what was being taught--a multiple choice posttest, an individually administered posttest presented via flash cards, and direct questions asked during the presentation; observers recorded the viewers' frequency of attention and described their behavior. The achievement results were inconclusive, due to small sample size and the sophistication of the viewers vis-a-vis the show, although the multiple choice test appeared the least appropriate technique. Both attention measures were useful. A replication of the study using primary level educable mentally retarded subjects and normal primary students would be useful. (Author/PB)

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RESEARCH REPORT #7210
Margery A. MacDonald
May 24, 1972

EVALUATION OF ITV: ELECTRIC COMPANY PILOT

Margery A. MacDonald

ABSTRACT

The purpose of this pilot study was to find appropriate methods for the evaluation of instructional television. The subjects, five intermediate level educable mentally retarded students, were shown three video-taped segments of the "Electric Company." Measures of both attention and achievement were utilized in three trials. The results, while inconclusive due to the small sample size, indicate that the most effective achievement measures were the individually administered test and the stop-tape interview. Both attention measures used -- recording of frequency of subjects watching and written observations of behavior -- were found to be good indicators of appeal; however, the observational data yielded more insight into the interaction between subject and media.

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SPECIAL REPORT No. 7210
COMPUTER-BASED PROJECT for the EVALUATION of MEDIA for the HANDICAPPED

Title: EVALUATION OF ITV: ELECTRIC COMPANY PILOT

BY: Margery A. MacDonald

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 (BEH - 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 #7210
COMPUTER BASED PROJECT
Margery A. MacDonald
May 24, 1972

EVALUATION OF ITV: ELECTRIC COMPANY PILOT

The purpose of this pilot evaluation was to find an appropriate method for evaluating instructional television. Therefore, more attention should be given to the measures employed in this study than to the results.

In evaluating any form of media, it is necessary to determine the extent to which educational goals and objectives are being met. More often than not, the objectives of a piece of media are not clearly outlined prior to production and must be determined from viewing the finished product. In the case of the Electric Company, however, the Children's Television Workshop (CTW) research staff has done a commendable job of stating, in behavioral terms, the specific objectives of the series. Part of the evaluation problem, then, was to determine the extent to which these stated objectives were being achieved.

The second important consideration in the evaluation of instructional television is appeal. Is the show sufficiently attractive to gain the attention of its audience? It would seem logical that the closer children attend to a show, the more they will learn from it. Therefore, the pilot evaluation of Electric Company included measures of both attention and achievement.

METHOD

SUBJECT: 5 intermediate EMH students whose reading scores on the Wide Range Achievement Test (WRAT) ranged from 2.0 - 2.6. The same subjects were used for all three trials.

EQUIPMENT: Three one-half hour show segments were video taped for use in the study (shows #54, #56, and #57).

Objective questions were photographed and presented in a slide presentation format. The data on these questions was gathered via the G. E. Student Response System. (See Appendix A.)

Flashcards were prepared for the individual achievement test.

DESIGN: Three trials were run, each using a different combination of achievement and attention measure.

TRIAL #1: A set of multiple-choice questions were used as both a pre-test and a post-test. The criteria for achievement of an objective was a 20% pre/post gain and 60% correct on an answer (post-test only). Attending behavior was measured by having an observer record, at 10 second intervals, the number of children watching the media.

TRIAL #2: Achievement was measured by stopping the tape at predetermined points and asking a child (whose name was

selected prior to the trial) what he was learning. The child's response was scored on a scale from 1 to 3 and an observation of the group response was made. (See Appendix B). Attention was recorded in the same way as in Trial #1.

TRIAL #3: Achievement was measured using an individually administered test presented on flash cards. The pre-test was given three days before the showing, the post-test immediately after. Attention was measured by recording observations made of the children during each show segment.

RESULTS

TRIAL #1 (Show #54) Gain score analysis for this trial was considered inappropriate as the pre-test showed prior knowledge of 80% or greater on eight of the thirteen items.

Attention was rated 76 (out of a possible 100) for students watching.

TRIAL #2: (Show #56) The stop-tape interview revealed that most of the students in the sample understood what was being taught by the media The weakest show segment was the "punctuation" sequence. (See Appendix B.)

Attention was rated 90 (out of a possible 100) for students watching.

TRIAL #3: (Show #57) Results of the individual achievement tests are reported in Table #1.

The attention observation is included herein as Appendix C. Overall attention to this show was high, with several children participating verbally throughout.

DISCUSSION

The results of all achievement measures were inconclusive. One explanation may be that the subjects used in this pilot were too sophisticated for the material being presented. S's were chosen on the basis of reading scores on the WRAT, administered over a year ago. Results of a more recent WRAT indicate that the reading level of this group ranges from 2.4 to 4.6, which may explain the high level of prior knowledge evidenced on all achievement measures.

Among the achievement measures, the experimenter adjudged the individual test and the stop-tape interview to be the most effective, and the multiple-choice question format least effective in measuring the objectives. The flash card technique, unlike the multiple-choice question, allows a child to demonstrate a number of reading skills, e. g. making consonant blends The stop-tape technique not only allows the child an opportunity to verbalize what he is learning, but also seems to encourage attention to the media. In trial #2, the subjects were alerted to the fact that the tape would be stopped and seemed to be enthusiastically awaiting their turn to respond throughout the showing. For these reasons, the experimenter did not consider this technique disruptive but, rather, beneficial to the learning process.

Both attention data gathering techniques were found to be effective. However, while "eyes -on-screen" data often measures close attention to the media, it cannot give information on children's verbal and motor reactions to show segments. These kinds of responses, e.g. reading a sign aloud, are noteworthy, especially when evaluating a reading show, and provide valuable inputs into the evaluation process.

RECOMMENDATIONS

The experimenter considers the findings of this pilot to be of limited value due to: 1) inappropriate selection of sample, and 2) small sample size. In order to further investigate methods of evaluating instructional television, the experimenter recommends that the pilot be repeated on two other samples: 1) a normal first grade group, and 2) a primary EMH group.

TRIAL #3

Pre and Post-test scores on Individual test.

TABLE I

ELECTRIC COMPANY PILOT

Question ITEM	Student #1 PRE	Student #1 POST	Student #2 PRE	Student #2 POST	Student #3 PRE	Student #3 POST	Student #4 PRE	Student #4 POST	Student #5 PRE	Student #5 POST
1	+	*	+	+	+	+	+	+	+	+
2	-		+	+	-	+	+	+	-	+
3	-		+	+	-	-	+	+	-	+
4	+		+	+	+	+	+	+	+	-
5	+		-	+	-	+	+	+	-	+
6	+		+	+	+	+	+	+	+	+
7	+		+	+	+	+	+	+	+	+
8	+		+	+	+	+	+	+	+	+
9	-		-	+	-	+	+	+	-	-
10	+		+	+	+	+	+	+	-	-
11	+		+	+	-	+	+	+	-	+
12	+		-	+	-	+	+	+	-	+
13	+		-	+	+	+	+	+	+	+
14	+		-	+	+	+	+	+	-	+
15	+		+	+	+	+	-	+	+	+
16	+		+	+	+	+	+	+	+	+
17	-		+	+	+	+	-	+	-	-
18	-		+	+	+	+	+	+	+	+
19	-		+	+	+	+	+	+	+	+
20	-		+	+	+	-	-	+	-	+
21	-		-	-	+	-	+	+	+	+
22	-		-	-	+	-	+	-	+	-
23	-		-	-	-	-	-	-	-	-
24	+		+	+	+	+	+	+	-	-
25	-		-	+	-	-	-	+	-	+

* Absent on day of Trial #3

+ = correct
- = incorrect

APPENDIX A

ELECTRIC COMPANY PILOT EVALUATION

OBSERVATION #1
Achievement Measure
Show #54

CONCEPT	BEHAVIORAL OBJECTIVE
Short "i" sound	The child can demonstrate his knowledge of individual letter/sound correspondence by blending the sounds in simple linear sequence to produce intelligible words. He can do this following a simple blending model or a word family model.

QUESTIONS

1) Which word sounds like bit?

1. car
2. hat
3. cab
*4. hit

2) The "i" in did sounds like the "i" in:

1. bite
2. light
*3. grip
4. site

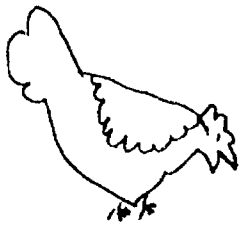
CONCEPT

"ch" sound

BEHAVIORAL OBJECTIVE

The child can recognize certain groups of letters as single units and process them as such when sounding out words.

QUESTIONS



3)
1. curtain
2. clothespin
*3. chicken

4) Tester says: "Which word begins with the sound "ch"

1. cloth
2. crack
*3. church
4. crank

CONCEPT

"all family

BEHAVIORAL OBJECTIVE

The child can recognize larger spelling patterns as single units and process them as such when sounding out words.

QUESTIONS

5) B+ all =
1. (bat)
2. (ball)
3. (bud)

CONCEPT	BEHAVIORAL OBJECTIVE
Sight word: Is	The child can recognize certain groups of letters as simple units and process them as such when sounding out words.

QUESTION

6) Tester says: "Which of the following is the word "is"?

1. if
2. it
*3. is
4. in

CONCEPT	BEHAVIORAL OBJECTIVE
Morpheme - ing	The child can interpret some high frequency Standard English morphemes when presented in appropriate context.

7) Choose the correct answer:

1. The boy was sat.
2. The boy was sitted.
*3. The boy was sitting.

8) Choose the correct answer:

1. The top is spin.
*2. The top is spinning.
3. The top spin.

CONCEPT	BEHAVIORAL OBJECTIVE
Sight word: if	The child can recognize certain groups of letters as single units and process them as such when sounding out words.

QUESTION

9) Tester says: "Which of the following is the word if"

1. is
2. in
*3. if
4. it

CONCEPT	BEHAVIORAL OBJECTIVE
Silent "e"	The child recognizes the following structural spelling patters and can successfully read words containing them: Final "e" signalling a "long" vowel sound.

QUESTIONS

10) Tester says: "Which of the following is the word wine?"

1. wane
2. win
3. wing
*4. wine

11) Tester says: "Which of the following is the word 'made?"

*1. made
2. mad
3. mod
4. mode

CONCEPT	BEHAVIORAL OBJECTIVE
Capital letters and periods as cues	The child can use the following punctuation cues in interpreting sentences: a sentence ends with a ., a ? or an !; a sentence begins with a capital letter.

QUESTIONS

12) Pick the correct sentence:

1. The ball.lost the boy
2. The boy the ball.lost
*3. The boy lost the ball.

13) Pick the correct sentence:

1. The ocean.swins in the fish
*2. The fish swims in the ocean.
3. Swins in the ocean, the fish

APPENDIX B

MINUTE	STOP TAPE AT	QUESTION	CHILD	CHILD SCORE	GROUP OBSERVATION
4	end of Lorenzo	What is the word sound we are hearing? What sound was in all those words?	Abraham	2	All the children knew somewhat, but only one child gave a perfect response. (Tracy)
7	Crank call	What letters did all those words begin with?	Tracy	1	All the children agreed with Tracy's response.
15	Raymond Maypole	What sound did you hear in many of the words of that song?	Vivian	1	All of the children agreed with Vivian's response.
16	Go Away!	What does that sign say?	Lillianne	1	All the children spontaneously called out the answer before the tape was stopped.
20	Easy Reader	What are we learning about here?	Russel	1	All of the children agreed with Russel's response.
22	Lemonad	What does that word need if we want it to read "lemonade"	Abraham	1	All of the children agreed with Abraham's response.
26	Punctuation	According to the song, what does a comma tell us to do?	Tracy	3	Abraham and Vivian knew the answer. Lillianne knew somewhat but not completely. Russel made no response.
30	Crank	What is that word?	Vivian	1	The other four children answered incorrectly, "crack."

SHOW #56

1 = knew
2 = knew somewhat but not completely
3 = didn't know

APPENDIX C

ELECTRIC COMPANY PILOT
Trial #3

OBSERVATION OF GROUP BEHAVIOR
Show #57
(N=5)

Observations were made by show segment (28 total). All verbal responses were recorded in quotation marks. In most instances, attribution to the speaker was recorded also.

During "Electric Company" theme the children were very attentive. Most of them mouthed or sung the words . One child (Abraham) read aloud the sign "Show 57 .

SEGMENTS	REACTIONS
Shopping bags	"Wag" All attentive. Several mouth the words. "Wit" "W - i - t, wet." "Wit, wit, wit, wit!"
Water	Two children read aloud, "Water."
Restaurant Scene	"Waiter." All attentive. "Waiter" "I want water" "Well." (Abraham) "Waiter wants water" (Abraham laughs.)
With	All read "with." Attentive. "W - i - t - h" Lillianne.)
Snake (th)	Jerry looks around. Abraham, "th" "ma- th - math," "path," "bath." Three of the children smile at the ending.
Path	"Path."
Faces (th blend)	Vivian and Abraham make all blends aloud. Lillianne mouths them. Russel attentive but non-verbal. Jerry inattentive.
Thud	"Thud."

Think (etc.) Man in Box	"Think. Thick. Thud." Vivian and Jerry inattentive.
Haunted House	"We've seen this." (Vivian) Abraham inattentive. "What's that say?" (Jerry.) "Looks different." Several kids looking around room. Three of the kids laugh at the ending.
That doesn't swing	Three kids read it aloud. No response to ending.
Not Safe for Swimming	"Not Safe to Swim." "Not safe for swimming." (Abraham and Vivian.) Attention good. Vivian smiles at ending.
I am talking	"I am talking." (Abraham, Lillianne, Vivian) "I'm talking." (Abraham)
ALK block	"Ooh, ooh, we've seen this before. (Abraham) "Ooh, alk .... talk, walk, chalk." (All of the group.)
Marashishi	Three of the kids attending. Abraham leaning back in chair, eyes closed. Begins paying attention by middle of segment. All children say "four alks" aloud. Vivian looks out window. Abraham says "stuck" for stalk. Vivian sucks her thumb.
Hey! Walk carefully	All eyes on screen.
Walk - Don't Walk	"Walk." Don't Walk." Read by several kids before read aloud on show.
I will not!	"I won't. You will." (Abraham) Abraham laughs. Shouts with characters on screen. Lillianne laughs. Vivian smiles.
He would be a nice pet	Several kids mouth the words. Attention falls off quickly.
I can't swim	"I can't." "I can't. "Can't swim. Vivian and Abraham inattentive.

The Early Bird Catches	Abraham pieces it together at first sight. "The Early Bird catches the worm. A period spozed to go at the end." (Vivian) Vivian looks out the window. Jerry looks at his feet. The others are inattentive. Vivian sucks thumb. Abraham inattentive. Abraham, "That makes sense there." "The early bird cathces the worm. (Abraham) Repeats this over and over. All the kids are fidgeting, rocking in their seats, slumping, swinging their legs etc
Worm	"Worm" (everyone)
Supper	"Supper, supper" (All) "Supper time (Abraham) "Super." (Abraham)
Vi's Diner	"Super, Super. Abraham and Jerry are fooling around. Vivian lying back in seat All the kids are fidgeting. Several yawn. Vivian looks at the ceiling Jerry yawns. Vivian sucks her thumb. All become more attentive toward the end.
Rock Bank	Vivian nods her head in time to the music. "Dinner, Diner." Lilllianne laughs. Abraham smiles and repeats the words. Jerry is attentive.
Wild Guess	Lilllianne yawns. Jerry and Vivian look around. Others are attentive but do not react. Abraham becomes inattentive. Jerry is listening then fidgets. Lilllianne tells Jerry to sit still. Jerry and Abraham are fidgeting. "Wild guess."
Love of Chair	"As our story begins .. (Vivian) Vivian and Abraham read and say most of the sentences. Attention very high. "What about Naomi?" (Vivian) "Love of Chair." (Jerry) Russel hits Vivian.
The Last Word	"Wave" (All) Vivian waves.