DOCUMENT RESUME

ED 034 323 24 EA 002 710

AUTHOR Chase, Clinton I.
TITLE Institute in Research Design and Evaluation. Final Report. (November 20-26, 1968).
INSTITUTION Indiana Univ., Bloomington.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-8-8059
PUB DATE Dec 68
GRANT OEG-0-8-988059-4592(010)
NOTE 21p.

EDRS PRICE EDRS Price MF-$0.25 HC-$1.15
DESCRIPTORS *Educational Research, *Educational Researchers, Evaluation Methods, *Evaluation Techniques, *Institutes (Training Programs), Program Evaluation, Research Design, Research Methodology, *Research Skills
IDENTIFIERS ESEA Title I, ESEA Title III

ABSTRACT

This report describes a 1-week institute designed to upgrade research and evaluation skills of persons associated with PL 89-10 Title I and Title III projects. The institute's objectives were to illustrate and provide experience in: (1) operationalizing objectives of instructional programs; (2) designing projects with appropriate controls to allow valid observations of change; and (3) constructing and applying observational tools, besides standardized tests, appropriate for assessing outcomes of instructional programs. Of the 23 participants, 70% evaluated their change in ability by responding to a postsession questionnaire. In general, respondents indicated that they had either "improved somewhat" or "improved greatly," their ability to deal with the topics of the institute. The appendix includes copies of the institute program, a list of institute participants, and pre- and postsession questionnaires administered to the participants. (JH)

FINAL REPORT
Project No. 8-8059
Grant No. OEG-0-8-988059-4592(010)

INSTITUTE IN RESEARCH DESIGN AND EVALUATION

December 1968

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

Final Report
Project No. 8-8059
Grant No. OEG-0-8-988059-1459(010)

Institute On Research Design and Evaluation

Clinton I. Chase
Indiana University
Bloomington, Indiana
December, 1968

This institute reported herein was pursuant to a grant from the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF

HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

TABLE OF CONTENTS

SUMMARY

This report describes an institute designed to upgrade research and evaluation skills of PL 89-10 Title I and Title III personnel. The institute's objectives were to illustrate and provide experience in: a) operationalizing objectives of instructional programs, b) designing projects so as to provide controls and avoiding sources of invalidity so that meaningful observations of change can be made, and c) constructing and applying observational tools beside standardized tests, appropriate for assessing outcomes of instructional programs.

The institute convened on November 20, 1968 with two-and-a-half hour meetings in the morning, two-and-a-half hours in the afternoon and an hour-and-a-half of tutoring in the evening. The meetings continued, with the exception of Saturday afternoon and Sunday, through November 26, 1968. Topics dealt with were: basic, nonexperimental and quasi-experimental designs for research--their limitations and sources of invalidity; operationalizing outcomes of research problems; developing and applying measuring tools for specific project outcomes; applying unobtrusive measures and nonreactive variables in analysing project outcomes; and item sampling techniques appropriate to assessing teaching outcomes while economizing on testing time.

The program was evaluated by mailing a self report questionnaire to each participant after the institute was completed. Responses to the questionnaire indicated a general belief that participants had clearly upgraded their skills in research design and in the evaluation of the impact of instructional programs.

FINAL REPORT
INSTITUTE IN RESEARCH DESIGN AND EVALUATION

Introduction

The value of Title I and Title III projects under PL 89-10 depends upon the adequacy of their design and the effectiveness of their evaluation. However, Guba (1967) after surveying for the U.S. Office of Education the evaluation schemes involved in Title III proposals concluded that most proposal writers are still uninformed about emergent meanings and uses of evaluation, and seem unaware of the criteria that might be applied to an evaluation design to determine whether it is appropriate or inappropriate. As a result, Guba believed, the typical design is inferior and likely to lead to invalid or unreliable conclusions.

Therefore, it was the purpose of this institute to provide experiences which would upgrade the research and evaluation skills of Title I and Title III personnel. Specifically, the institute proposed to illustrate and provide experience in a) operationalizing objectives of instructional programs, b) designing projects so as to provide controls and avoid sources of invalidity so that meaningful observations of change can be made, and c) constructing and applying observational tools, beside standardized tests, appropriate for evaluating outcomes specific to given instructional programs.

Methods

Announcements of the institute were sent to all school districts in Indiana and to all federal project supervisers in the states adjacent to Indiana. From this list of applicants responding to this announcement, twenty-five persons were selected. Criteria were:

1. The applicant's supervisor certified that the applicant was contractually committed to carrying out a phase of a Title I or Title III project.

2. The applicant had at least two years of school experience.

3. Preference was given to persons less than 50 years of age.

4. On the basis of reported training in research and evaluation the applicant could profit considerably from an institute covering the topics proposed for instruction. (Appendix A)

Twenty-three of the twenty-five applicants selected actually appeared for the institute.

Instruction followed the typical pattern of two-a-a-half-hour sessions each morning and again each afternoon. Problem assignments were given each day and an hour-and-a-half tutoring session was provided each evening to assist with these assignments. The outline of the sessions is given in Appendix B. Procedures were developed at the "rule of thumb" level due to the background of the participants and the compressed nature of instruction.

When participants had returned to their homes a questionnaire was sent to them so that they might evaluate their increase in proficiency in topics dealt with in the institute.

Results

A summary of the results, item by item, of the questionnaire is given in Appendix C. These data are based on a 70 per cent reply to the document. In general, participants preferred the categories "improved somewhat" and "improved greatly" to describe the change in their ability to deal with the topics of the institute.

A number of letters have been received from participants expressing gratitude for the opportunity to participate in the institute. They have also suggested that institutes be proposed in sequence so that successively complex topics could be dealt with, with intervening experience on the job.

Some personal observations of the instructional staff are also relevant here. The consensus of staff opinion was that the group was enthusiastic about the instruction. The requests for faculty time outside scheduled sessions indicated that the participants were considerably interested in the ideas of the institute and wanted to explore them further. Continuing correspondence with participants again reveals this to be true.

The homogeneity of background, due to the selection process, contributed materially to the progress of the group. This condition reduced the need for individual instruction and increased the impact of group sessions.

The bringing together of school research personnel in itself was a definite advantage to them. In the local setting many districts do not have enough persons in research for personnel to conduct a penetrating dialogue. At the institute common problems were explored both within sessions and outside of scheduled sessions. This alone was a major benefit of the institute.

Conclusions

A short (one week) institute providing intensive instruction in research design and evaluation techniques can be effective in upgrading the research skills of Title I and Title III personnel. If the skills of these people can be increased in this short a period, great promise appears in repeat of several short term programs, each dealing with a successively complex topic.

It is proposed that short institutes such as represented here be developed in sequence with planned on the job experiences intervening between institutes. During the course of a year this procedure would also accommodate persons with different levels of skill in research design and evaluation, and would bring the base level of ability up across many federal projects.

REFERENCE

Guba, Egon G. "Report on the Evaluation Provisions of Twenty-One Title III Proposals," mimeographed, pp. 15, October 15, 1967.

APPENDIX A

DIRECTIONS: Some of the terms in the following list may be familiar to you--others may not. No one is expected to be familiar with all the terms. For planning purposes in the Institute, it would be helpful if you would react to each term by using the following scheme:

1. I could give a brief extemporaneous lecture on the concept involved.
2. I could discuss the concept after a little "brush-up".
3. Sounds familiar, maybe I could follow lectures which provided a rapid review.
4. Sorry, I've heard of it but it's pretty foggy to me.
5. I never heard of it.

____ normal curve	____ covariance
____ criterion-related validity	____ matched pairs
____ construct validity	____ product-moment
____ split-half reliability	____ regression coefficient
____ stability	____ correlation coefficient
____ equal-appearing interval	____ cross products
____ Likert scale	____ standard error of estimate
____ arithmetic mean	____ intercept
____ standard error of the mean	____ slope
____ standard deviation	____ principle of least squares
____ confidence interval	____ homoscedasticity
____ variance	____ linearity
____ chi square	____ predicted score
____ z-score	____ criterion variable
____ two-tailed test	____ variance accounted for
____ t-test	____ partial correlation coefficient
____ level of significance	____ regression equation
____ predictor variable	____ expectancy table
____ parallel products	____ degression coefficient
____ principle of most squares	

I especially need information on _____

PLEASE RETURN THIS COMPLETED FORM BY RETURN MAIL IN THE ENVELOPE PROVIDED.

Return of this questionnaire is an expression of my acceptance of an appointment in the Institute. Must by postmarked before November 11.

_____
Signature

APPENDIX B

Program

Institute on Research Design and Evaluation

		Reference
November 20		
9:30 a.m.	Registration	
10:00 a.m.	Review of descriptive statistics through correlation	1.2, 1.3 4.1, 4.2
1:00 p.m.	Probability, confidence limits, simple analysis of variance	2.1, 3.3 3.5
7:00 p.m.	Tutor Session (in dormitory)	
November 21		
9:00 a.m.	Developing measuring devices for assessing unique outcomes of projects: The Thurstone Scale (read 4.11 before class)	
1:30 p.m.	Outline of research designs appropriate for applied research, sources of invalidity, possible conclusions	
7:00 p.m.	Tutor Session	
November 22		
9:00 a.m.	Problem identification, definition, assessment	
1:30 p.m.	Developing measuring devices for assessing unique outcomes of projects: The Likert Scale, Q-sort	
7:00 p.m.	Tutor Session	
November 23		
9:00 a.m.	Complex experimental design and analysis I	2.2, 2.4
November 24	NO SESSIONS	
November 25		
9:00 a.m.	Complex experimental designs and analysis II	2.4, 4.9
1:30 p.m.	Likert Scale and Q-sort (cont.) Unobtrusive measures	

November 26

9:30 a.m. Measuring Change

1:00 p.m. Special Topics

APPENDIX C

INSTITUTE ON RESEARCH AND EVALUATION
November 20-26, 1968

DIRECTIONS: A list of tasks a researcher may be called upon to do is provided below. You are not here asked to do any of the problems presented, but rather to rate each task on a five point scale as follows. "As a result of the recent Institute on Research Design and Evaluation my confidence in my ability to perform the following tasks has:"

1. improved fantastically
2. improved greatly
3. improved somewhat
4. improved only slightly
5. not improved at all

2.50* 1. Organize the necessary procedures for obtaining test results following the item-sampling technique.

2.37 2. Compute estimates of a school district mean and standard deviation from item sampling data.

2.67 3. State why some possible sources of invalidity are not characteristics of the institutional cycle research design (e.g., history, mortality).

2.75 4. State why maturation is a possible source of invalidity in the institutional cycle research design.

Item 5 refers to the following problem.

Assume that the data in the table below represents learning scores of 36 randomly chosen twelve-year-old boys with IQ's between 95 and 105. The learning was conducted under three methods of instruction (lecture, discussion, and demonstration) and by three randomly selected teachers. Each teacher used each method on a different group of four boys.

Teacher	Teaching Method I	II	III
A	6	11	8
	8	10	10
	9	13	11
	11	14	12
B	9	14	7
	12	14	7
	12	15	8
	13	15	12
C	4	9	11
	4	8	13
	5	11	13
	9	12	14

2.75 5a. Determine the sources of variation.

2.67 5b. Test the implied hypotheses using appropriate F-ratios.

2.50 5c. Compute the total sum of squares.

*Median rating by participants.

Item 6 refers to the following situation.

The following experiment involved eight (8) classrooms. Four of the eight classrooms involved in the experiment are from your own school district (S_1) and four from an adjacent school district (S_2). Each classroom was administered three types of feedback on an English composition--positive, negative, none. Suppose that each class was split into 9 subgroups at random and that three subgroups were given feedback independently under each of the three types. Thus, three observations, X_1, X_2, and X_3, on the single dependent variable of subsequent test performance exist for each classroom. This is illustrated below:

School District	Classroom	Type of Feedback		
		Positive	Negative	None
Your Own	1 2 3 4	X_1, X_2, X_3		
An Adjacent	5 6 7 8			

2.35 6a. Determine the degrees of freedom for each source of variation.

2.75 6b. Test the implied hypotheses using appropriate F-ratios.

2.67 6c. Write conclusions based upon the F-ratios.

3.50 7. Interpret the findings from a single classification, analysis of covariance technique.

3.10 8. State a good reason for using a covariate in an analysis (i.e., why use analysis of covariance).

Item 9 refers to the following situation.

A project proposes to pretest a group of children in reading and then provide a specialized training program. At the end of the program a posttest will be given. Gain scores (posttest-pretest) will be used to assess the impact of the program.

2.41 9a. Tell why raw gain scores are often misleading.

2.35 9b. Propose a method of correcting raw gains.

2.67 10. Describe situations in which a Thurstone (equal appearing intervals) scale is more appropriate than a Likert (summated ratings) scale, and vice versa.

2.10 11. Construct a Thurstone scale for assessing attitude X, including computing the scale's reliability.

2.17 12. Construct a Likert scale for assessing attitude Y, including computing of the scale's reliability.

2.41 13. Define a given academic problem in terms of observable operations.

2.35 14. Devise and conduct a Q sort to determine change in teachers' attitudes associated with a given program.

2.64 15. I have a study involving upgrading curricular offerings. I can supplement my statistical data with evidence from non reactive, unobtrusive variables.

APPENDIX D

Institute on Research Design and Evaluation
Indiana University
November 20-26, 1968

Roster of Participants

Name	Address
Cook, Richard Paul	620 East 10th Place Gary, Indiana 46402
DaFoe, Darrell	Research Office Cedar Holmes Building
Davis, Frank M.	120 E. Walnut Street Indianapolis, Indiana
Hannah, James M.	250 Main Street Whiteland, Indiana 46184
Jones, Gary E.	4520 W. Ridge #139 Gary, Indiana 46408
Jordan, John G.	Box 121 Batesville, Indiana 47006
Lane, Elizabeth M.	4390 Hyland Drive Dayton, Ohio 45424
Linderman, Jim	33621 Tawas Tr. Westland, Michigan 48185
Meekin, Norman Dale	959 Guilford Street Huntington, Indiana 46750
Miller, Jerry L.	1017 N. Sarah Street Mishawaka, Indiana
Morgan, Bob	200 N.W. 7th Street Evansville, Indiana 47708
Newell, Ted F.	1301 N. Michigan Street Plymouth, Indiana 46563

Roster (cont.)

Name	Address
Pruitt, Gene E.	6901 Zionsville Road Indianapolis, Ind. 46268
Reichert, Walter	1025 W. Rayen Avenue Youngstown, Ohio 44502
Richason, Eileen	Box 303, R. R. #2 Logansport, Indiana 46947
Roberts, Barbara	112 Woodlawn Avenue LaGrange, Kentucky 40031
Robison, Del G.	115 Harding Avenue Maryland Hts., Mo. 63042
Rowe, Robert B.	R. R. #1 Hope, Indiana 47246
Sennett, A. Lowell	8601 Columbia Avenue Munster, Indiana 46321
Szyperski, Thomas	1220 Howard Street Kalamazoo, Michigan 49001
Tilley, Herbert T.	R. R. #4, Box 224 Goshen, Indiana 46526
Ulsaker, Samuel	290 W. Michigan Ave. Jackson, Michigan 49201
Watson, James H.	Box 144 Schererville, Indiana
	* * * *
Dr. H. Glenn Ludlow	School of Education, 253 Indiana University Bloomington, Indiana 47401
Dr. Clinton I. Chase	School of Education, 253 Indiana University Bloomington, Indiana 47401
Dr. Richard C. Pugh	School of Education, 253 Indiana University Bloomington, Indiana 47401