

R E P O R T R E S U M E S

ED 018 565

08

VT 001 334

RESEARCH TRAINING INSTITUTE FOR PERSONS IN VOCATIONAL  
EDUCATION PARTICIPATING IN RESEARCH AND DEVELOPMENT  
ACTIVITIES (JUNE 13-AUGUST 12, 1966).

BY- LAMAR, CARL F.

KENTUCKY RESEARCH FOUNDATION, LEXINGTON

REPORT NUMBER BR-6-2343

PUB DATE AUG 66

GRANT OEG-2-6-062343-1349

EDRS PRICE MF-\$0.50 HC-\$3.60 88P.

DESCRIPTORS- \*INSTITUTES (TRAINING PROGRAMS), \*EDUCATIONAL  
RESEARCH, \*RESEARCH SKILLS, \*VOCATIONAL EDUCATION,  
\*LEADERSHIP TRAINING, PROGRAM EVALUATION,

THIRTY SECONDARY AND COLLEGE TEACHERS, SUPERVISORS, AND  
TEACHER EDUCATORS FROM AGRICULTURE, HOME ECONOMICS, BUSINESS  
AND OFFICE EDUCATION, DISTRIBUTIVE EDUCATION, HEALTH, AND  
TRADE AND INDUSTRIAL EDUCATION PARTICIPATED IN AN INSTITUTE  
DESIGNED TO INCREASE THE RESEARCH COMPETENCE OF PERSONS IN  
POSITIONS OF LEADERSHIP. ALL EXCEPT ONE WERE ENROLLED FOR  
GRADUATE SCHOOL CREDIT. THE PROGRAM INCLUDED INSTRUCTION AND  
PRACTICE IN STATISTICS, RESEARCH METHODOLOGY, AND RESEARCH  
DESIGN. CONSIDERABLE TIME WAS USED IN PREPARING 14 PROPOSALS  
FOR RESEARCH, TRAINING, EXPERIMENTAL, DEVELOPMENTAL, OR PILOT  
PROJECTS. THE PROGRAM INCLUDED (1) 40 HOURS OF STATISTICAL  
INSTRUCTION, (2) 40 HOURS OF STATISTICAL LABORATORY, (3) 50  
HOURS OF RESEARCH METHODOLOGY, (4) 50 HOURS OF RESEARCH  
DESIGN, AND (5) 100 HOURS OF LIBRARY STUDY, COMMITTEE WORK,  
AND FIELD TRIPS. ALL PARTICIPANTS THOUGHT THE INSTITUTE WAS  
WELL WORTH WHILE. THEY RECOMMENDED THAT FUTURE INSTITUTES  
SCHEDULE MORE TIME FOR PREPARING PROPOSALS, INCLUDE MORE  
PRACTICAL APPLICATION OF STATISTICS AND MORE TIME FOR THE  
STATISTICS LABORATORY, AND PLAN THE INSTITUTE FOR TWO SUMMERS  
TO INCLUDE RESEARCH METHODOLOGY, AND DESIGN THE FIRST AND A  
COMBINATION OF METHODS, DESIGN, AND STATISTICS THE SECOND.  
THE APPENDIX CONTAINS PUBLIC RELATIONS MATERIALS, AN  
APPLICATION FORM, A LETTER OF ACCEPTANCE, A LIST OF PROJECT  
TITLES DEVELOPED BY PARTICIPANTS, A BIBLIOGRAPHY, AND THE  
INSTITUTE EVALUATION FORM. (EM)

ED018565

FINAL REPORT

Project No. 6 2343  
Grant No. OEG 2-6-062343-1349

RESEARCH TRAINING INSTITUTE  
FOR PERSONS IN VOCATIONAL EDUCATION  
PARTICIPATING IN RESEARCH AND DEVELOPMENT ACTIVITIES

August 1966

United States  
Department of Health, Education and Welfare  
Office of Education  
Bureau of Research

VI001334

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE  
PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS  
STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION  
POSITION OR POLICY.

RESEARCH TRAINING INSTITUTE  
FOR PERSONS IN VOCATIONAL EDUCATION  
PARTICIPATING IN RESEARCH AND DEVELOPMENT ACTIVITIES

Project No. 6 2343  
Grant No. OEG 2-6-062343-1349

PROGRAM DIRECTOR

Carl F. Lamar

June 13 - August 12, 1966

The Research Training Institute reported herein was conducted 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.

THE UNIVERSITY OF KENTUCKY RESEARCH FOUNDATION  
LEXINGTON, KENTUCKY 40506

## TABLE OF CONTENTS

	Page
<u>Orientation of Program</u> -----	1
Type of Program -----	1
Program Period -----	2
Training Group -----	2
Program Objectives -----	6
<u>Description of the Program</u> -----	7
Statistical Methods -----	7
Research Methodology -----	12
Research Seminar -----	13
Research Practicum -----	23
Research Design -----	26
Conferences, Laboratory Work and Field Trips -----	29
Institute Staff and Consultants -----	31
<u>Evaluation of the Program</u> -----	33
Program Factors -----	33
Objectives -----	33
Content -----	36
Staff -----	37
Trainees -----	38
Organization -----	40
Budget -----	42
Unique Features of the Program -----	42
Major Weaknesses or Difficulties -----	43
Over-all Evaluation of the Program -----	45
Recommendations to the U. S. Office of Education ---	51
<u>Program Reports</u> -----	52
Publicity -----	52
Application Summary -----	52
Trainee Summary -----	53
Program Director's Attendance -----	53
Financial Summary -----	54

Appendexes

	Page
Appendix A	News Release in the Lexington Daily Newspaper May 1966 (copy)----- 55
Appendix B	Article in State Department of Education <u>School News</u> May-June 1966 (copy) --- 56
Appendix C	Article in KRCU Newsletter, June 1966 (copy) ----- 57
Appendix D	Article in KRCU Newsletter, Septem- ber 1966 (copy)----- 58
Appendix E	Brochure Announcing Research and Development Training Institute in Vo- cational Education (copy)----- 59
Appendix F	Directions for Making Application to Attend the Research Training Instit- tute ----- 64
Appendix G	Application for the Research Training Institute ----- 67
Appendix H	Letter to Applicants Accepted to the Institute ----- 70
Appendix I	Research and Development Projects Planned ----- 71
Appendix J	Bibliography - Helpful References in Educational Research ----- 73
Appendix K	Questionnaire Answered by Institute Participants----- 80

List of Tables

Table		Page
1	Persons Enrolled in the Research Training Institute in Vocational Education-----	2
2	A Taxonomy of Activities Involved in Educational Change -----	18
3	Grades Earned by Participants in the Research Training Institute by Courses -----	46

List of Illustrations

Figure		
1	Schedule of the Eight-Week Research Training Institute for Vocational Education at the University of Kentucky --	8

## ORIENTATION OF PROGRAM

### 1. Type of Program

This was a Research Training Institute planned and conducted for a selected group of persons employed in positions of leadership in Vocational Education, who had indicated an interest in research and development activities.

The Institute was designed to upgrade the basic competencies of persons whose major concerns were with programs of Vocational Education. The instruction was planned to increase their understanding, interest, capability, and involvement in research and related activities important to the development of effective instructional programs.

The focus of attention was on the role of research and development, as an ancillary service, in the processes of long-range policy making, and program planning and implementation in Vocational Education. The instructional phases of the Institute included orientation to the concept of research and development in education, statistical methods, research methodology, research design, evaluation of research, and dissemination of research findings. Considerable attention was given to the fundamentals in preparing proposals for research and to training and developmental projects.

The minimum expectations of the Institute were that the participants would increase their awareness of the significance of research and development in Vocational Education to the extent that they would want to improve their competencies in conducting research and development projects, applying research findings, and communicating them to their colleagues.

It was anticipated that having these people participate in an Institute of this nature, would enable them to become valuable resources in helping initiate and carry out research activities essential to the development of sound programs of Vocational Education. It was expected that they would be willing to cooperate with the State Research Coordinating Unit in Vocational

Education in conducting research, training, and experimental, developmental, or pilot projects. Hopefully, many of them would be stimulated to continue their training in research and become active researchers.

## 2. Program Period

This was an eight-week Research Training Institute. It started June 13 and ended August 12, 1966. The Institute was recessed during the week of July 25 - 29, so that the participants could attend the State Vocational Education Conference. Several members of the Institute were on the Conference program.

## 3. Training Group

Thirty people were enrolled in the Research Training Institute. This limitation was set primarily because of the desire to maintain the maximum contact possible between participants and instructors, and to minimize the cost of instruction.

There were two considerations in selecting people for the Institute. Representation was sought from administration, supervision, teacher education, and teaching. Also, persons were selected from all of the program fields in Vocational Education. Distribution of participants according to these criteria is shown in Table 1. The eight persons listed as supervisors have both administrative and supervisory responsibilities.

TABLE 1. PERSONS ENROLLED IN THE RESEARCH TRAINING INSTITUTE IN VOCATIONAL EDUCATION

Vocational Services	Employment Status			Total
	Supervisors	Teacher Educators	Teachers	
Agriculture	2	1	5	8
Business and Office	2	2	3	7
Distribution	1		1	2
Health Occupations	1		2	3
Home Economics	1	1	4	6
Trades and Industry	1	3		4
Total	8	7	15	30



All persons enrolled in the Institute were actively engaged in Vocational Education. Through personal interviews they expressed an interest in developing programs of Vocational Education based upon research findings. They were selected on the basis of their recognition of inadequacies in the present Vocational programs and their willingness to participate in research and related activities planned to improve the programs.

Persons were selected for the Institute because their research background was considered to be limited. Persons whose academic education or experience indicated sufficient research competence to independently design and carry out significant research and related studies were rejected. However, the minimal research background expected of the participants was somewhat flexible.

All participants enrolled in the Institute, except one, had at least the baccalaureate degree and were qualified to take courses for graduate credit in the Graduate School at the University of Kentucky.

Because of the unique situation in the certification of certain personnel in the area vocational schools of the State, permission was granted for the admission of the participant who did not have the baccalaureate degree, but, according to his academic record, contribution to Vocational Education, and interest in research, there was reasonable possibility of his success in the Institute and subsequent involvement in research and development projects.

#### Institute Participants

The 30 persons enrolled in the Research Training Institute and their area of specialization follows:

- 1). Bishop, Reva I. (Mrs.), Home Economics Teacher, North Hardin High School, Vine Grove, Kentucky
- 2). Bright, Charles L., Supervisor of Business and Office Education, State Department of Education, Frankfort, Kentucky.

3). Crawford, Robert L., Distributive Education Teacher, Mt. Sterling High School, Mt. Sterling, Kentucky

4). Fairless, Alice Sue, Teacher Educator in Home Economics, Murray State University, Murray, Kentucky

5). Faris, Margaret L. (Mrs.), Instructor of Practical Nursing, Lafayette Area Vocational-Technical School, Lexington, Kentucky

6). Gibson, Charles H., Teacher Educator in Industrial Education, Eastern Kentucky University, Richmond, Kentucky

7). Giehls, Roy, Jr., Agriculture Teacher, Fleming County High School, Flemingsburg, Kentucky

8). Greer, Jerry W., Agriculture Teacher, Park City High School, Park City, Kentucky

9). Harris, Peggy A., Teacher of Business and Office Education, Butler High School, Louisville, Kentucky

10). Hendon, Robert L., Teacher of Agricultural Economics, Murray State University, Murray, Kentucky

11). Hulette, Lela Y. (Mrs.), Teacher Educator in Business and Office, University of Kentucky, Lexington, Kentucky

12). Joiner, William A., Agriculture Teacher, Christian County High School, Hopkinsville, Kentucky

13). Karsner, Bobbie J. (Mrs.), Teacher of Business and Office Education, Franklin County High School, Frankfort, Kentucky

14). Lemons, Clifton D. (Dr.), Teacher Educator in Industrial Education, Murray State University, Murray, Kentucky

15). Myers, Thomas E., Teacher Educator in Industrial Education, Eastern Kentucky University, Richmond, Kentucky

16). Neel, Charles O., Supervisor of Agricultural Education, State Department of Education, Frankfort, Kentucky

17). Price, Shirley A. (Mrs.), Home Economics Teacher, Garrard County High School, Lancaster, Kentucky

18). Schmidt, Doris A. (Mrs.), Supervisor of Health Occupations Education, State Department of Education, Frankfort, Kentucky

19). Smotherman, Eugene R., Supervisor of Trade and Industrial Education, State Department of Education, Frankfort, Kentucky

20). Spiceland, Lucy E. (Mrs.), Instructor of Business and Office, Morehead State University, Morehead, Kentucky

21). Stratton, Donnalee, Home Economics Teacher, Johns Creek High School, Pikeville, Kentucky

22). Talbott, Robert M., Assistant Supervisor of Distributive Education, State Department of Education, Frankfort, Kentucky

23). Underwood, Helen (Mrs.), Home Economics Teacher, Shepherdsville High School, Shepherdsville, Kentucky

24). Vanover, George W., Director of Business and Office Education, State Department of Education, Frankfort, Kentucky

25). Wade, Charles D., Supervisor of Agricultural Education, State Department of Education, Frankfort, Kentucky

26). Whitaker, Samuel E., Agriculture Teacher, Crab Orchard High School, Crab Orchard, Kentucky

27). Wilds, James C., Agriculture Teacher, Woodford County High School, Versailles, Kentucky

28). Williams, Mildred C. (Mrs.), Home Economics Teacher, Mt. Washington High School, Mt. Washington, Kentucky

29). Winkler, Mildred G. (Mrs.), Teacher-Coordinator of Practical Nursing, Harlan Area Vocational-Technical School, Pineville, Kentucky

30). Young, Nelda Sue, Teacher of Business and Office, Morehead State University, Morehead, Kentucky

#### 4. Program Objectives

The general objective of the Institute was to increase the research competence of persons in positions of leadership in Vocational Education. It was hoped that by increasing their research competencies, these people would become more critical consumers of research, more sensitive to problematic situations which call for research, more willing to cooperate with groups whose primary functions were to carry on research and development activities, more capable of relating research findings to educational practice, and more effective disseminators of research findings applicable to problems in Vocational Education.

To realize the general objective of the Institute, the instructional program was planned to attain the following specific objectives:

- 1). Recognize problems in Vocational Education, define them, identify variables relevant to the problems, and determine the means of measuring effects of control or manipulation of them.
- 2). Design developmental instructional programs with adequate control and measurement of relevant dependent and independent variables.
- 3). Understand statistics to a sufficient depth to be capable of interpreting reported research and to apply the more common statistical treatments in drawing inferences from available data.
- 4). Prepare proposals for research studies which would gain proper consideration for support from appropriate agencies.

5). Conduct in-service education sessions for colleagues which would enable them to interpret the implications of applicable research findings to programs in Vocational Education,

6). Develop greater responsibility and competence of individuals in Vocational Education in working with researchers who would be carrying on problem investigations, basic and applied research, program development, field testing, and the dissemination and implementation of research findings.

7). Use research-derived information in making plans for an expanded program of Vocational Education which would satisfy an increasing demand.

#### DESCRIPTION OF THE PROGRAM

To accomplish the objectives of the Institute, it was planned for eight weeks. The program included instruction and practice in statistics, research methodology, and research design. Considerable time was used in the preparation of proposals for research, training, and experimental, developmental, or pilot projects. A diagram of the Institute schedule is shown in Figure 1, page 8.

The Institute was planned so that the participants could earn nine hours of graduate credit at the University of Kentucky. The courses offered were: Education 573 - Testing Program Development (Statistics) (3 credits); Education 656 - Methodology in Educational Research (3 credits); and Education 695 - Special Problems in Vocational Education (Research Design) (3 credits).

Statistical Methods. -- Throughout the Institute all participants had instruction and laboratory experience in statistical methods. Each day they had one hour of class instruction and one hour of laboratory work on statistical exercises and problems - in all about 80 hours of instruction in statistics.

one hour 7:30 - 8:30				Statistics 8 weeks				
one hour 8:30 - 9:30			Statistics Laboratory	8 weeks				
one hour 9:45 - 10:45		Research Methodology				Research Design 4 weeks		
one and a half hours 11:00 - 12:30		Practicum Research Methodology				Practicum Research Design 4 weeks		
two and a half hours 2:00 - 4:30		Library Study, Conferences, Committee Work, and Field Trips		8 weeks				
Week	1st	2nd	3rd	4th	5th	6th	7th	8th

Figure 1. Schedule of the eight-week Research Training Institute for Vocational Education conducted at the University of Kentucky, June 13 to August 12, 1966

The class instruction was devoted to a teacher presentation of the subject matter with a reasonable degree of freedom for the students to ask questions and discuss the subject matter as the work proceeded. The laboratory sessions were used for consideration of the application of the subject matter presented. The laboratory work included problem solving, exercises in sampling, presentation and criticism of previously executed designs and statistical treatments, and the use of computer services.

The emphasis on statistics was thought to be necessary if the participants were to be able to critically evaluate research findings and interpret them to co-workers. Also, there was a strong belief by those who planned the Institute that if the objective of creating cooperative participation in research endeavors in Vocational Education was to be realized, a good understanding of basic statistics, data handling, presentation of data, sampling, and sample contamination was mandatory.

Because of the limited mathematical and statistical background of most of the students and the lapse of time since many of them had seriously applied this aspect of the Institute, a large number of the participants became somewhat apprehensive and discouraged in the early part of the instruction. Some of the students appeared to suffer considerable anxiety. Improvement occurred, however, as the students recovered unused skills and were able to concentrate their efforts on meaning rather than mechanics. The progress made by the entire group was extremely gratifying as the Institute moved along. At the end the group felt that the instruction in statistics was quite successful. This was definitely due to the persistence and hard work of the students. Appraisal of the Institute by the participants is presented in the section on "Evaluation of the Program", page 46.

The teaching objectives for the statistical methods part of the Institute were:

- 1) To enable the students to obtain sufficient understanding of the nature and mechanics of statistical inference so that their reading of research and related studies would be more meaningful.

2) To help the students secure sufficient statistical understanding to make communication possible and worthwhile between them and the research specialists working with them on the design of research and related studies.

3) To help students acquire adequate knowledge of terms and principles of statistics to use profitably the assistance of statisticians in analyzing the data for their own research.

To accomplish the purpose of this part of the Institute, the basic outline and essential topics handled were:

- A. Meaning of statistics
- B. Statistics used in education
- C. Enumeration and measurement in education
  - 1) Ordinal scales
  - 2) Cardinal scales
  - 3) Mathematical conventions
- D. Frequency distributions
  - 1) Graphic representation
  - 2) Measures of central tendency
  - 3) Dispersion and variance
  - 4) Skewness and kurtoses
- E. Basic probability theory (probability distribution models)
- F. Normal distribution function (the z-score)
- G. Testing statistical hypotheses, Type I and Type II errors, and choosing confidence intervals



- H. Sampling distribution of the mean (the t-score)
- I. Correlation and simple linear regression, testing the significance of r, and the error of measures
- J. Partial and multiple correlation
- K. Chi-Square test of significance and enumerative statistics
- L. Comparison of more than two groups - the analysis of variance
- M. Standard non-parametric tests

In teaching statistics, the major emphasis was placed on the theory underlying the type of treatment needed, its usefulness, assumptions that had to be satisfied, and the applicability to educational research and related activities. It seemed logical that this emphasis was consistent with the objective to produce researchers, consumers of research, interpreters of research, and participants in group research efforts.

The instructional time spent on statistics was used to help the class "acquire a knowledge of this basic tool of research". The statistical laboratory sessions were used to help the students "learn how to use statistics" in solving problems in education.

In operating the statistical laboratory, ten desk calculators were used by the participants - two purchased and eight rented. The primary activities of the statistical laboratory sessions were problem solving, instruction in the use of desk calculators, and critiquing the use of statistical treatments.

The participants also had the opportunity to learn about computer applications to statistical analysis. The method used was to apply computer solutions to the same problems which were manually solved by the class. There was no intention to make the students proficient in choosing and applying computer programs to statistical problems. However, the criteria, mechanics, interpretation, and practicality of computer utilization were emphasized.

During the statistical laboratory period, student-teacher contact was increased by making use of consultants from the firm that furnished the calculators, to explain the operation of the calculators and demonstrate how to use them. Three representatives from the firm worked with the class during two laboratory sessions. They also provided teaching aids in using the calculators. In addition, two research specialists and two research assistants on the staff of the Kentucky Research Coordinating Unit assisted with the laboratory sessions.

The basic textbook used for the course was Elementary Statistical Methods in Psychology and Education by Bloomers and Lindquist. The text was supplemented by many other references made available through the Institute Library, the Study Manual which accompanies the text, and by teacher-prepared materials which were used primarily in dealing with certain non-parametric tests of significance. A bibliography of suggested references for the Institute is in the Appendix, page 76.

Research Methodology. -- This part of the Institute was planned to develop an understanding of research as a systematic method of scientific investigation, to take a careful look at what takes place at each step of the process, to acquire an understanding of the techniques and tools used, and to determine how each step should be carried out. It is here that statistics was introduced as a "basic tool in designing and conducting research."

The primary purpose of the Institute was to develop the effective ability of the participants to understand the processes of research and development as they relate to Vocational Education, and to the forces contributing to educational change.

The study of research methods and procedures in the Institute was divided into two four-week periods. Each phase was planned to include a one-hour research seminar, followed by a one-and-a-half-hour practicum each day on research methodology (See Figure 1).

## Research Seminar

In an endeavor to increase the understanding and capability of each participant regarding research and development in Vocational Education, the research seminar covered research theory, concepts in research and development in education, and the steps in planning and executing research projects. Considerable attention was given to activities deemed essential in increasing one's competence to produce, interpret, and communicate research findings. These abilities were thought to be important in creating an empathetic understanding of the nature of research and its role in bringing about desirable educational change.

The intent during the first four weeks was to evolve an understanding of the steps in the process of research and development and to make clear the relation between educational research and directed educational change. It was expected that a proper understanding of these things would not only create a wholesome attitude toward educational researchers, but would also bring about greater involvement in research and related activities by the participants in areas appropriate to their responsibility, produce more discriminating consumers of research who would look for objective evidence to support the felt need for educational change, and indicate the direction the change should take.

The teaching objectives for the research methodology part of the Institute were to cause the participants:

- 1) To understand the concept of research and development as a process in bringing about educational change in Vocational Education.
- 2) To understand and apply the method of scientific investigation when confronted with problems in education which call for this approach.
- 3) To recognize and use the appropriate techniques and tools in educational research.
- 4) To define significant problems in Vocational

Education and take appropriate steps in preparing proposals for dealing with them.

In order to accomplish the objectives of this part of the Institute, the basic instructional outline and essential topics handled were:

- A. Concept of Research and Development in Education
- B. Scientific Method of Investigation
  - 1) The science-philosophy process
  - 2) Meaning of research
  - 3) Relation of research to reflective thinking, scientific method, and problem solving
  - 4) Kinds of creditable research
  - 5) Research applicable to Vocational Education
- C. Responsibility in research and development
  - 1) Who should be involved and to what extent
  - 2) Personal qualifications and training
  - 3) Ethics of the experimenter
  - 4) Acceptable procedures
- D. Outline of the research study
  - 1) Sources of problems
  - 2) Identification of a problem
    - a) Criteria for selecting the problem
    - b) Characteristics of a good problem statement

3) Definition of the problem

- a) Problem analysis
- b) Related literature
- c) Need for the study
- d) Limitations of the investigation
- e) Statement of assumptions
- f) Definition of terms
- g) Sources of data
- h) Method of investigation

4) Working hypothesis

- a) Function of the hypothesis
- b) Stating the hypothesis
- c) Testing the hypothesis

E. Types of research studies

- 1) Descriptive
- 2) Developmental
- 3) Clinical and case
- 4) Experimental
  - a) Control of variables
  - b) Validity and criticism of designs

F. Research design

- 1) Types of design
- 2) Sources of data
- 3) Data-gathering techniques and instruments

G. Analysis and interpretation of data

- 1) Organization and presentation of data
- 2) Analysis of the data
- 3) Drawing inferences from the data
- 4) Generalizations and implications drawn from research findings

H. Report the completed research

- 1) Base educational change on research findings
- 2) Prepare the final report

In orienting the participants in the Institute to the concept of research and development and to its function as an ancillary service in Vocational Education, a specialist was employed two days as a consultant.<sup>1</sup> The purpose was to develop a clear understanding of the process of research and development, how it should function in the formulation of effective instructional programs, who should be involved in the process at the different steps, and who should assume the major responsibility for getting each phase properly carried out.

The "Taxonomy of Activities Involved in Educational Changes," which has been accepted as the basic process of research and

---

<sup>1</sup>Allen Lee, Director of Research and Development Projects in Vocational-Technical Education, University of California, Berkeley, June 14 and 15.

development, is presented in Table 2, page 18. In discussing this concept, it was emphasized that a clearly defined philosophy and objectives of program were needed before the process could be carried out. Problem definition, the first step of the process, is accomplished only as one seeks to attain certain objectives, accepted in terms of established beliefs about the program. The steps pertaining to the process of research and development presented to the participants and discussed by the group were:

1) Philosophy and Objectives. -- Purpose to develop an understanding of all aspects of the program to be carried out, establish an accepted philosophy of the program, and formulate the objectives which, when attained, would contribute to the fulfillment of the accepted beliefs regarding the program.

2) Problem Definition. -- Purpose to identify significant problems that need attention, establish priorities, focus attention on the problems, and seek reactions which will lead to positive decisions as to the next step.

3) Research. -- Purpose to discover truths, give direction to program development, analyze, synthesize, describe, and validate the findings.

4) Program Development. -- Purpose to conceptualize a program, based on research findings, which will serve as a vehicle for testing the new information to ascertain its significance in facilitating change. The suggested activities would be to create, devise, construct, and facilitate a program based on objective information which would show potential for meeting felt needs.

5) Field Testing. -- Purpose to take the program, conceptualized on the basis of research findings, and try it out empirically to determine its usefulness. The intention would be to discover inherent strengths and weaknesses and make correction where feasible. Thus, the process would be to evaluate the program under field conditions so as to determine its educational significance, economic efficiency, and relative usefulness.

TABLE 2. A TAXONOMY OF ACTIVITIES INVOLVED IN EDUCATIONAL CHANGE  
(Process of Research and Development)

<u>Problem Definition</u>	<u>Research, Basic and Applied</u>	<u>Program Development</u>	<u>Field Testing</u>	<u>Dissemination</u>	<u>Implementation</u>
○ S.D.E.	□ H.E.	○ S.D.E.	○ S.D.E.	○ S.D.E.	○ S.D.E.
□ H.E.	△ L.S.	□ H.E.	△ L.S.	□ H.E.	△ L.S.
△ L.S.	○ S.D.E.	△ L.S.	□ H.E.	△ L.S.	□ H.E.

Problem Definition - The State Department of Education should assume the major role after thorough consultation with Higher Education and local schools.

Research - Higher Education should accept major responsibility for research. Local schools and the State Department should be involved. Perhaps the State Department and local schools should assume a more significant role in applied research.

Program Development - The State Department should have the major leadership role for program development. Higher Education and local schools should be significantly involved.

Field Testing - The State Department of Education, local schools, and Higher Education probably should have equal involvement in field testing.

Dissemination - The State Department of Education should have the major role. Higher Education and local schools should have supporting roles.

Implementation - The State Department should have the major role because the Constitution gives this responsibility to the State. However, the State delegates much of its responsibility to local schools. Higher education should assume a minor role.





6) Dissemination. -- Purpose to take programs that merit recognition and acceptance on the basis of field testing, and give them visibility so as to provoke widespread interest in them and possible adoption. This would involve all forms of communication media; especially demonstrations, conferences, workshops, and advice from knowledgeable sources. This step would be considered successful to the extent that people who should know about the program have been properly informed regarding it.

7) Implementation. -- Purpose to improve educational programs by stimulating desirable change based on objective evidence. This would require the adaptation of new practices or programs which have proven their merits in field tests. It should be accomplished to the extent possible through the use of available resources. Success should be measured in terms of the extent to which the goals that prompted the research were reached.

The areas included in the process of research and development were dealt with separately. However, it was recognized that they overlap, and frequently certain areas would be omitted in a given situation. However, emphasis was placed on the basic importance of acquiring an understanding of the change process. Implementation based on valid research findings was considered the real "key" to success, provided plans were made to create a favorable environment for research and development and the other forces that influence educational change. Involvement of all professional people employed to plan and conduct instructional programs was recognized as a must. They need adequate comprehension of their responsibility and authority. It was agreed that they also need opportunity to develop the competence required in their job.

In considering research methodology, an attempt was made to provide ample opportunity for thorough discussion and practical experience in each phase of the process. Considerable time was spent in helping the participants acquire an understanding of the techniques and tools used in research. To some extent this was done in the sessions on statistics. However, the purpose here was to develop an understanding of where and how

these techniques and tools fit into the research process. Instruction at this point concentrated on a detailed study of specific techniques which could be used to carry out educational research. The basic content was introduced by the teacher and followed by class discussion and assigned activities designed to develop further the techniques being studied. To accomplish the objectives of this aspect of research methodology, the basic instructional outline used and the topics handled were as follows:

A. Observation as a research technique

- 1) Types of observations
  - a) Structured
  - b) Unstructured
- 2) Assets and limitations of this technique

B. Interview as a research technique

- 1) Types of interviews
  - a) Standardized
  - b) Unstructured
- 2) Advantages and disadvantages of this technique
- 3) Techniques of interviewing
  - a) Introduction - Approach
  - b) Sequence
  - c) Probing
  - d) Recording
  - e) Closing the interview

C. Questionnaire as a research technique

1) Types of questionnaires

a) Fixed alternatives

b) Open-ended

2) Types of questions

a) To ascertain facts

b) To find out beliefs about what are facts

c) To ascertain feelings

d) To determine standards of action

e) To discover present and past behavior

f) To identify reasons for beliefs, feelings or behavior

3) Use of the questionnaire

a) Mailing procedure

1) Preparation of the cover letter

2) Consideration of factors that influence returns

b) Interviews

4) Advantages and disadvantages of this technique

D. Scaling as a research technique

1) Levels of measurement

a) Nominal

- b) Ordinal
  - c) Interval
  - d) Ratio
- 2) Types of scales
- a) Differential scales (Thurstone)
  - b) Summated scales
    - 1) Likert
    - 2) Guttman
  - c) Cumulative scales (Bogardus)

E. Sampling as a research technique

- 1) Terms used in sampling
- 2) Types of sampling
  - a) Probability
    - 1) Simple random
    - 2) Stratified random
    - 3) Cluster
  - b) Non-probability
    - 1) Accidental
    - 2) Quota
    - 3) Purposive

## F. Data summary and analysis

- 1) Steps in summarization
  - a) Coding
  - b) Tabulating
  - c) Use of descriptive statistics
  - d) Use of inferential statistics
- 2) Causal relationships
- 3) Generalization

Activities pertaining to the study of the techniques and tools used in research included a research report from a professional journal, a detailed assignment involving question construction for questionnaires and interview schedules, and the appraisal of examples of data-collection instruments.

### Research Practicum

Paralleling the research seminar, was a practicum on research methodology. It was closely related to the subject matter in the research seminar. During the first four weeks of the Institute the practicum was of a general nature. In this period close attention was given to the essential activities in the research process, and opportunity was provided for the participants to get experience in carrying out certain significant assignments. Attention was directed to the significance of library research, the need for good habits in using the library, and the importance of a good system in recording useful information.

A research assistant, working with the Kentucky Research Coordinating Unit, was employed as librarian to help the participants use the research-resource library set up for the Institute and to find resource materials available in the University Library and in the college or departmental libraries elsewhere on the University campus.

The participants were introduced to a variety of resource materials related to Vocational Education and aspects of educational research. Current research reports were made available to the participants. They pertained to types of research, research methods, statistical treatment, implications of the research, significant questions in Vocational Education, and suggested solutions to these problems.

Initially, the intention in organizing the research practicum was to lead the group to identify five or six high-priority problem areas they would like to explore for significant problems, needing immediate attention. The participants were then to select these problem areas according to their interests. Staff members of the Kentucky Research Coordinating Unit were to serve as group leaders. Each group would be expected to identify a problem and move through the essential steps in developing it into a research, training, or developmental project proposal.

Basically, this plan was followed. However, it became clear that several members of the Institute wanted to devote their time to problems of a personal interest. Several wanted to work on an individual basis, while in some instances two or three people identified a problem of mutual concern. The group selected a total of fourteen problems which they wanted to develop into research, training, or developmental project proposals. Thus, the practicum was planned to satisfy their desires. The fourteen problems selected by the Institute participants are included in the Appendix, page 74.

The schedule developed for the research practicum sessions was as follows:

- 1) Group as a whole, identify five or six significant problem areas in Vocational Education.
- 2) Each participant select the problem area of major interest where he or she would like to work during the practicum sessions.

3) A staff member of the Kentucky Research Coordinating Unit serve as discussion leader for each group.

4) Each group select a problem (or problems) to be developed into a proposal - research, training or developmental.

- a) Identify the problem
- b) Formulate a problem statement
- c) Define the problem

(Persons who have problems which they want to pursue on an individual basis should feel free to do so. However, they will be expected to provide the Director with a completed proposal at the end of the Institute).

5) Each group make a thorough review of the literature on its problem and develop a rationale for the study. Library research should enable each group to understand the present research activity and available results and to appraise research methodology relative to the problem.

6) Each group develop a theoretical construct for the problem, if possible.

7) Each group formulate the objectives to be attained.

8) Each group determine the appropriate research method(s) to use.

- a) Survey
- b) Analytical
- c) Experimental
- d) Action - experimental, developmental, or pilot

9) Each group identify the research techniques and tools to be used.

- 10) Each group prepare the data-collecting instruments to be used.
- 11) Each group determine the research procedures to be followed.
- 12) Each group evaluate the results (completed proposal).

This part of the Institute involved the entire staff of the Kentucky Research Coordinating Unit for the four weeks, and the services of one consultant for two days. The Institute Director, with the assistance of one Research Specialist, handled the seminar on research methodology. The Research Specialist worked with the class primarily on the techniques and tools used in research. The consultant helped develop a good concept of research and development in education and set the stage for the Institute.

In addition, the Institute Director had the help of three Research Specialist, and two Research Assistants on the staff of the Kentucky Research Coordinating Unit in conducting the research practicum during the first period.

The basic textbook used for the part on research methodology was Understanding Educational Research by D. B. Van Dalen and W. J. Meyer. This book was supplemented by numerous other references made available through the Institute Library and other libraries on the University campus. Teacher-prepared mimeographed materials also were made available to the class. The bibliography prepared for the Institute is in the Appendix, page 76.

The participants had about 50 hours of instruction on research methodology during the first four weeks of the Institute.

Research Design. -- During the second four weeks of the Institute emphasis in the research seminar and research practicum was placed on research design. Instruction and practice were oriented to the design and execution of research studies which, hopefully, would be carried out by the supervisors, teacher educators, and teachers enrolled in the Institute.

Major emphasis was given to the fundamentals in preparing proposals for research, training, and experimental, developmental, or pilot projects. The instruction in the seminar during this period was concentrated on the studies identified by the



participants. Considerable time was spent in analyzing different research designs and critiquing the plans developed by the class pertaining to the problems they were working on during the practicum.

To accomplish the objectives of this part of the Institute, the basic instructional outline and essential topics covered were as follows:

A. Criteria for evaluating research, training, and developmental project proposals.

B. Statement of the problem.

C. Review of related literature - development of a rationale for the study - a theoretical base, if possible.

D. Formulation of objectives

E. Statement of hypotheses or questions

F. Outline of the procedure

1) Selection of the population to be studied

2) Determination of the sampling method to use

3) Development of an appropriate design to control significant variables

4) Provisions for data collection

5) Methods of analysis to be used

6) Time schedule

7) Expected end product

G. Personnel to be used

H. Facilities and equipment required

I. Preparation of the budget

## J. Program evaluation review technique (PERT)

It was intended that this phase of the instruction would give particular attention to helping the participants learn how to design proposals for research, training, and developmental projects. It was thought that this experience would increase their realization of the significant role which they should have in aiding the full-time educational researcher in planning and carrying out large-scale and long-range research projects in Vocational Education.

During the last four weeks of the research practicum the participants worked individually and in small groups. Their assignments were determined from their particular interests. Their time was largely used to design proposals for future action and to critique each phase as it was developed.

It was anticipated that the participants would have an opportunity to learn about all kinds of possible projects in research and development such as: research, training, experimental, demonstration, and pilot. The proposals that were developed included all of these categories except demonstration, which was discussed in the seminar.

Arrangements were made to have Dr. John K. Coster, Professor of Agricultural Education and Educational Administration, University of Nebraska, handle the last four weeks of the Institute pertaining to research design. Dr. Coster worked with the Institute one week, became ill, and was unable to continue. The Institute was fortunate to obtain the services of Dr. John Rowlett, Dean of the School of Technology, Eastern Kentucky University, to work with the participants on research design the last week. The Institute Director and an Associate Research Specialist with the Kentucky Research Coordinating Unit handled the research seminar the other two weeks.

Dr. Coster directed the research practicum during the week he worked with the Institute, and Dr. Rowlett was in charge of it the last week. The Institute Director, three Associate Research Specialists, and two Research Assistants helped with the research practicum during the entire four weeks.

To increase the effectiveness of the instructional program pertaining to research design, two consultants were employed. Dr. David R. Krathwohl, Dean of the School of Education, Syracuse University, worked with the staff and participants one full day on "How to Prepare Research Proposals". The day was used to discuss and analyze all aspects of preparing proposals for funding. The basic outline followed is indicated on page 27. Dr. Krathwohl worked with the Institute at the beginning of research design.

Dr. Desmond Cook, Professor of Education, The Ohio State University, worked with the staff and participants one full day on the "Program Evaluation Review Technique (PERT)" in planning research and development projects. He worked with the Institute during the last week.

The basic texts used in the part on research design were How to Prepare a Research Proposal by David R. Krathwohl, and Understanding Educational Research by D. B. Van Dalen and W. J. Meyers. These texts were supplemented by many other references made available through the Institute Library and other libraries on the University campus. Also, numerous visual aids and other teaching materials were used. Copies of proposals and abstracts of proposals received from the U. S. Office of Education and from other states were made available to the participants.

The participants received about 50 hours of instruction on research design during the last four weeks of the Institute.

Conferences, Laboratory Work and Field Trips. -- The period from 2:00 to 4:30 pm each day was planned for the participants to use as they felt most beneficial to them (See Figure 1). The librarian was available to give assistance in the Institute Library. The classroom where the calculators were kept was accessible, and staff members were available to provide any help requested. Several groups and individuals working on definite projects used this period to move ahead with their proposals.

When Drs. Krathwohl and Cook were available as consultants, this period was used for continuation of the class instruction

pertaining to "How to Prepare a Research Proposal" and "How to Use the Program Evaluation Review Technique" in planning research projects. Drs. Coster and Rowlett were available each day during this period for the entire week each of them worked with the Institute. They worked with individuals and groups in exploring ideas, reviewing plans, and critiquing parts of proposals that had been developed.

The Institute participants were taken on one field trip: to the State Department of Education in Frankfort to observe the facilities for research and related studies. They also had the privilege of hearing about plans for research and development activities and opportunities for assistance in conducting research and related projects. The program planned for the field trip follows:

#### Field Trip

### OPPORTUNITIES FOR RESEARCH AND DEVELOPMENT IN EDUCATION MADE POSSIBLE BY THE STATE DEPARTMENT OF EDUCATION

(Short talks, followed by discussion period)

1. State Plan for Vocational Education in Kentucky,  
and Provisions for Research and Development -

E. P. Hiltōn, Assistant Superintendent  
for Vocational Education  
State Department of Education

2. Other Opportunities for Research and Development in  
Education Supported by the State Department of Education -

Don E. Elswick  
Director of Research  
State Department of Education

3. Vocational Education Program Information System  
(VEPIS) Being Planned for Kentucky -

Edgar E. Hume, Jr., Director of Fiscal  
Accounting in Vocational Education  
State Department of Education

(Tour of the Department)

4. Tour of State Department of Education to observe facilities and equipment used for Research and Development projects.

- 1) Observation of Computing Center and its operations
- 2) Observation of Research-Resource Library and its operations

The participants had the opportunity to fill in a coded questionnaire and transfer the information to a punch card used by The Honeywell Computer. They also saw it processed by the computers and heard a member of the Computing Center analyze the output.

In the Research-Resource Library they had the opportunity to view micro-fiche film produced by ERIC and to observe the micro-fiche reader-printer reproduce hard copy from the micro-fiche film.

It was pointed out that this was one possibility of getting the "word" disseminated throughout the State as to what resources and services were available to the people who wanted to engage in research and related studies.

The participants in the Institute had the opportunity to see the Computing Center at the University of Kentucky as individuals and in small groups. The Computing Center was used in connection with the class sessions on statistics, as previously indicated.

Institute Staff and Consultants. -- The Research Training Institute was considered to be adequately staffed even though some changes had to be made in the teaching assignments. It was intended that Dr. John Coster would handle the entire four weeks devoted to research design. His unfortunate illness made it necessary for other arrangements to be made after he had taught only one week. We were fortunate to get Dr. John Rowlett to help in this area the last week of the Institute.

It was intended that each of the three consultants would be employed for two days. However, Dr. Krathwohl and Dr. Cook were available for only one day. It was generally agreed that they made a very significant contribution to the success of the Institute.

The personnel used to conduct the Research Training Institute were as follows:

Staff:

- 1) Dr. Carl F. Lamar, Director of the Institute and Director of the Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky
- 2) Dr. John K. Coster, Professor of Agricultural Education and School Administration, College of Agriculture, University of Nebraska
- 3) Dr. John D. Rowlett, Dean of the School of Technology, Eastern Kentucky University
- 4) Mr. Daniel S. Arnold, Associate Research Specialist, Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky
- 5) Miss Carol J. Van Tassel, Associate Research Specialist, Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky
- 6) Dr. Anna M. Gorman, Associate Professor in Home Economics Education, College of Education, University of Kentucky.
- 7) Mr. Frank Asbury, Research Assistant, Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky
- 8) Miss Norma Miller, Research Assistant, Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky

9) Mr. Marvin Albin, Graduate Assistant, Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky

10) Miss Carol P. Bosley, Secretary, Research Training Institute in Vocational Education, College of Education, University of Kentucky

Consultants:

11) Dr. Allen Lee, Director of Research and Development Projects in Vocational-Technical Education, University of California, Berkeley

12) Dr. David R. Krathwohl, Dean of the School of Education, Syracuse University, Syracuse, New York

13) Dr. Desmond Cook, Professor of Education, School of Education, The Ohio State University, Columbus

The use of the people employed in the Kentucky Research Coordinating Unit, which is supported by the U. S. Office of Education Under the Vocational Education Act (4(c)), was viewed as justifiable inasmuch as the development of research understanding and capability in Vocational Education was a primary objective of the KRCU. Also, participation in the Institute was considered to be valuable experience for members of the staff.

## EVALUATION OF THE PROGRAM

### 1. Program Factors

Objectives. -- It is believed that the objectives of this Research Training Institute were realistic and sound. If the State program of Vocational Education is to be served by an effective program of research and development, leaders in the State Department of Education, institutions of higher education, and local schools must cooperate in the program, and they must have the research competence appropriate to their level of activity and responsibility. People in these three groups must give

leadership to research and related activities if desirable educational change is to occur. They need to become producers of research and development, critical consumers of research findings, and willing and able cooperators with people whose primary functions are carrying on research and development projects.

At all of these levels there must be leadership capable of relating research to educational practice and effective disseminators of research findings applicable to significant problems in Vocational Education.

It was recognized that an intensive eight-week Research Training Institute would not provide adequate opportunity to produce fully the understandings and capabilities desired of the kinds of people enrolled in it. However, it was considered an excellent plan for getting these people oriented to the research process, giving them an opportunity to get the feel of it, and to identify those with good research potential. It was the opinion of those handling the Institute that an outstanding group of participants had been selected. Interest was above expectation. Thirty applicants were selected. Ten others were rejected, to stay within the terms of the contract.

An important part of the program was to involve the participants in "recognizing significant problems in Vocational Education, defining the problems, and identifying the important variables relevant to them. It became evident that the group had not given a great deal of attention to this endeavor. It was not feasible to use much Institute time for this purpose, even though it is deemed vital in research activities and in program development.

The effectiveness of research and related activities is dependent on the extent to which the "right questions" are asked and appropriate priorities are established in terms of relative significance and available resources. Also, the problems selected for attention must be correctly defined to give attention to the important variables and how they should be handled. This requires considerable dedication to program, continuous study, and practice. With purposeful involvement in problem definition, it is anticipated that greater visibility will be given to the



deep-seated problems in Vocational Education that need attention.

Perhaps more could have been accomplished in this objective if the participants had been selected for the Institute earlier and each of them had been asked to identify the "one problem in Vocational Education that, in his or her judgment, needed immediate attention and that called for research, training, or development - that he or she would like to give attention to during the Institute." This is an important change that would probably be made if the Institute were repeated.

The initial intentions were to select five or six problems and have the participants develop them into definite research, training, or developmental project proposals. Actually, the group selected 14 problems and developed them into proposals. It would have been more profitable if every participant had selected a problem and developed a proposal.

If the Institute could be repeated with the same group, two major changes would be considered in assignments in statistics:

1) The assignments would be more logically spaced and lightened somewhat to allow for more emphasis on the understanding of each technique and tool and its application in the total scheme of statistics. It seemed that at times the participants were overloaded with problem assignments. They then tended to become too concerned with details, and a great deal was lost in their realization of the total aspects of the Institute.

2) Probably some sacrifice would be made in the depth of instruction in parametric techniques in order to broaden the spectrum of non-parametric statistics and other parametric treatments. At the beginning, the participants tended to think in terms of small in situ experiments which would disturb the school routine as little as possible. For much of this type of research, parametric statistics are not as appropriate as non-parametric treatments.

Even though considerable time was made available for the participants to prepare proposals, it became evident that the

identification of an acceptable problem and the preparation of a clear and concise problem statement were difficult and time-consuming for most of the participants. If these activities could have been assigned to each person before the Institute started, perhaps much more progress could have been made in the early stages of the practicum in developing good problem statements.

It is believed that the objectives of the Institute were adequately achieved in terms of the expectations. The quality of participants, their enthusiasm, and their progress in carrying out the assignments exceeded the expectations of those who planned and conducted the Institute.

There are many indications that almost every participant in the Institute wants to follow through on his or her proposal and become involved in a research or developmental project. It is intended that the staff of the Kentucky Research Coordinating Unit will maintain contact with the participants and get most of the proposals developed during the Institute carried out.

Content. -- The focus of the Institute was on developing the understandings and capabilities required for outlining research, training, and developmental projects, and preparing proposals which would merit support for the projects. This objective was attained to the level of expectations. However, everyone felt that more time and attention could have been profitably devoted to all areas of the program.

Perhaps, if the Institute were repeated, more attention would be given to the possibilities of individual involvement in research and related activities, considering the expected employment of each participant in the immediate future. Definitely, more attention would be given to the dissemination and implementation of research findings.

Only one field trip was made by the group. Another field trip was planned. The intention was to take the group to an institute in the research business, to observe the facilities and operations, and the kinds of research activities being carried out. Perhaps the experience would have helped to reinforce the importance of research and development to Vocational Education which was

repeatedly stressed. The trip was canceled because of a crowded schedule and the cost.

In an eight-week institute, such as this one, two field trips probably should be the maximum number. Use of the Computing Center by participants in connection with their study of statistics should be considered a part of the laboratory experience, not a field trip.

Staff. -- The staff for this Institute is shown on page 32. We were extremely fortunate in having the Staff of the Kentucky Research Coordinating Unit in Vocational Education available to assist with the Institute. Only the services of the Director, Dr. Coster, Dr. Rowlett the three consultants, and a secretary were in the Research Training Institute budget.

The services of two associate research specialist, two research assistants, and one graduate assistant were furnished by the Kentucky Research Coordinating Unit. Dr. Anna M. Gorman, Associate Professor in Home Economics Education, University of Kentucky, helped with the research practicum. Her services were furnished by the University.

The staffing was considered excellent even though Dr. Coster's time was limited to one week, and Dr. Rowlett was employed without advance notice. The Director, one associate research specialist, and one research assistant worked full time with the Institute. The others worked part time, ranging from one week to about half time.

We would have preferred to use all of the consultants two days each, as indicated in the proposal. However, two of them were available for only one day each. Perhaps, if we had the opportunity to repeat the Institute, we would attempt to get a good consultant on "Tests and Measurements" to help with the research methodology. If the focus of the Institute were changed to give more emphasis to the use of research findings in the area of dissemination and implementation, perhaps a consultant in these areas would be desired.

The use of visiting professors and consultants of the

caliber used in the Institute was one of its outstanding features. The contributions they made to the quality of the instruction and to the insights and understandings of the staff and trainees were invaluable.

Trainees. -- All persons enrolled in the Institute were employed in Vocational Education. The criteria used in the selection of participants were:

a) Applicants must be employed as administrators, supervisors, teacher educators, or teachers in Vocational Education at the time of their application.

b) Applicants should be interested in the development of programs of Vocational Education based on research findings and the improvement of existing programs of instruction on the basis of research-gained information.

c) Applicants should have at least a limited academic background in research methodology and statistics.

d) Most of the applicants will be expected to hold the baccalaureate degree and to qualify for admission to the Graduate School of the University of Kentucky.

e) A few persons, who have in their academic and vocational careers demonstrated promise as research-oriented educators, but do not have the baccalaureate degree, may be accepted. However, they cannot acquire academic credit at the University of Kentucky.

f) A recommendation and an expression of empathy for research in Vocational Education from the applicant's supervisor are mandatory for acceptance.

g) Applicants will be accepted to this Institute solely on the basis of their ability to benefit from the program and their potential contribution to the profession, without regard to color or creed.

It was intended that the participants would be selected on

the basis of their field of specialization and their level of employment. It was hoped that near-equal representation would come from the program areas of agriculture, business and office, distribution, vocational guidance, health occupations, home economics, trades and industry, and technical. Also, near-equal representation was wanted from the different levels of employment: administration, supervision, teacher education, and teaching.

The distribution of participants according to these two factors is shown in Table 1. All program areas were represented except vocational guidance. Only one applicant was from this area, whose application was received too late. There were no applicants from teacher educators in the areas of distribution and health occupations. There were no applicants from teachers in trades and industry.

The applications were influenced some by the size of the programs in operation in the State, the way the program areas handle their pre-service and in-service training programs, and their certification requirements. Vocational guidance personnel in Kentucky are very few. There are no teacher educators in health occupations education, and only one in distributive education. Also, not many teachers in trade and industrial education have earned the baccalaureate degree.

Another difficulty met in attracting the kind of applicants desired was getting them released for eight weeks in the summer. Teacher educators usually teach in summer school. And, people with administrative responsibilities generally find it difficult to be away from their job eight weeks.

Thirty people were enrolled in the Institute, the maximum number requested in the proposal. They were paid a stipend, dependency allowance, and transportation (one round trip) for attending the Institute. All received stipends; 12 were paid a dependency allowance, ranging from one to four dependents; and 28 received pay for round-trip transportation, ranging from 26 to 540 miles.

All participants in the Institute were from Kentucky. They were selected on the basis of their potential involvement in

research, training and experimental, developmental or pilot projects which would be stimulated, facilitated, and coordinated by the Kentucky Research Coordinating Unit. The seven teacher educators came from four of the State Universities (Eastern, Morehead, Murray, and University of Kentucky); the eight supervisors came from the State Department of Education; and the 15 teachers came from all parts of the State.

A significant aspect of this Institute was its relation to the Kentucky Research Coordinating Unit in Vocational Education. The Kentucky Research Coordinating Unit intends to keep in close touch with the participants and get them involved in research and development activities which it expects to promote. These objectives of the Kentucky Research Coordinating Unit definitely relate to the expected outcomes of the Research Training Institute.

1) To stimulate, facilitate, and coordinate occupational education research and development activities in the State Department of Education, local school districts, colleges and universities, and other public and non-profit private agencies and organizations.

2) To coordinate occupational research activities within the State

3) To stimulate activities which will result in increased interest and improved competence in research, such as pre-service and in-service education of occupational researchers

Organization. -- The Research Training Institute was timed in terms of the objectives of the Kentucky Research Coordinating Unit, to focus attention on the importance of research and development, as an ancillary service to the State program of Vocational Education, and the need for competent researchers at all levels of the program. The participants in the Institute will be helpful in focusing attention on the importance of research, where it is needed, and who should be involved in it. There already have been many inquiries about the Institute and the possibility of having another one next summer. The information has been disseminated largely by the participants.

Timing with regard to the enrollment of administrators, supervisors, and teacher educators in the Institute probably was not very good. These people seem to have their fullest schedule in the summer, and many of them are reluctant to "upset the applecart." Teacher educators have full teaching loads, and administrators seem to be caught at the end of the fiscal year closing out programs and preparing for a new year. These people expressed a strong interest in participating in research-training programs if scheduled in the winter or spring.

Assuming that the objectives of the Institute were sound and the content appropriate for the objectives, to adequately deal with them in an eight-week research training institute would be a full schedule. There are people in Vocational Education - in the State Department of Education, in local schools, and in higher education - who need this kind of orientation and training as an introduction to broaden their preparation as occupational researchers. It should be continued.

Perhaps a different approach is required to serve the needs of certain administrators, supervisors, and teacher educators. The length of program and scheduling should make it possible for short sessions scattered over several weeks or months.

The daily schedule for this Institute was planned so as to complete the formal instruction, laboratory work, and practicum before noon (See Figure 1). This was a long morning. Perhaps, if the Institute were repeated plans would be made to have at least two hours of the formal instruction in the afternoon. An eight-week institute, such as this one, should have considerable flexibility in the schedule. There should be a permissive atmosphere for class discussions, study, and work sessions.

The Dean of Summer School at the University of Kentucky was extremely cooperative in making arrangements for facilities, classrooms, and housing needed by the Institute. The accommodations were excellent. The Institute was conducted in the Agricultural Science Building on the University of Kentucky campus. A large air-conditioned classroom, equipped with laboratory tables and electrical outlets for the calculators, was provided.

Also, six small air-conditioned conference rooms and a combination office-research-resource library were assigned to the Institute. The Institute Library was moved from the College of Education to the Agricultural Science Building for convenience of the participants. Such teaching aids as portable chalk boards, movie projector, overhead viewers, flannel boards, movie screen, and flip charts were provided. University housing was available for all participants, married and single, who requested it.

Budget. -- This project was approved for \$34,974, an amount more than adequate to meet the expenses incurred. Allowance for office supplies and textbooks was not allowed. Also, it was not possible to find a qualified research assistant to help with the statistical laboratory as requested.

## 2. Unique Features of the Program

This Institute was not unique in terms of its basic orientation. Emphasis was on the fundamental concepts of research and development in education. The primary aim was to select persons interested in research who had indicated a desire to upgrade their research competencies and increase their involvement in significant research and development projects pertaining to Vocational Education.

The Institute was somewhat different in that the focus of attention was on the development of a state-oriented program of research and development. It was designed to involve the leadership in the State Department of Education, local school systems, and institutions of higher education in a coordinated program of research and development to serve Vocational Education.

The Research Training Institute was planned by the Director and staff of the State Research Coordinating Unit in Vocational Education. It was recognized that increased attention must be given to the development of a large corps of competent research resource people employed at all levels of the State program of Vocational Education, if research and related activities are to have an impact on educational change.

The intention was to enroll in the Institute a selected



group of persons employed in positions of leadership in Vocational Education who would be willing to cooperate with the State Research Coordinating Unit in making research and development a strong ancillary service to the State program. This was accomplished to an acceptable degree, even though certain key persons who were interested in participating could not do so.

The concept of research and development is not new. It has received considerable attention by the advocates of educational change and the proponents of educational research. However, a research training institute planned to emphasize "The Taxonomy of Activities Involved in Educational Change" as a basis for orienting and training research personnel for the purpose of involving them in a State oriented program of research and development is somewhat different.

Perhaps the decision to involve the staff of the State Research Coordinating Unit in the Institute was significant. It seems to have merit in that the experience was extremely helpful to the staff in several respects. The staff had the opportunity to grow professionally, to become better oriented to the concept of research and development, to know more about Vocational Education, and to develop a closer working relationship with leaders in the State program of Vocational Education. It also made possible bringing together a competent staff to conduct the Institute and minimize the need for a great deal of additional financial support.

These features of the Institute were included expressly for the purpose of stressing the importance of research and development as a process in promoting educational change: (1) taxonomy of activities involved in educational change; (2) steps involved in preparing a research proposal; and (3) program evaluation review technique in planning research and development projects.

### 3. Major Weaknesses or Difficulties

Several problems arose unexpectedly which prevented the Institute from moving along as planned. However, no major weakness or difficulties were encountered. Perhaps, one

unexpected sickness of Dr. Coster and the necessity for him to quit teaching at the end of one week presented the major problem. Dr. Rowlett, his able replacement, helped overcome the difficulty.

In planning the research seminar, Understanding Educational Research by D. B. Van Dalen and W. J. Meyer was selected as the basic textbook. The order was placed two weeks before the Institute started. We were not told until after the Institute started that the book had been revised and the new edition was not available. However, copies of the old edition and supplemental references were used until the new edition was delivered, in about three weeks.

As already indicated, it is difficult, and in some instances practically impossible, to get administrators, supervisors, and teacher educators released for eight weeks in the summer to participate in a training program of this nature. It became apparent that certain members of this Institute were placed under severe pressure because of their administrative responsibilities and the nearness of the Institute to their office. However, the attendance in the Institute was almost perfect, and the participation was outstanding.

The trainees had a common interest in Vocational Education even though they had different levels of responsibility and came from many vocational fields. There was a considerable spread in their academic and professional training, ranging from one person still working toward the baccalaureate degree to one person who had completed the doctoral degree requirements. However, this dissimilar background did not seem to be a weakness, because of such reinforcements as the willingness of the participants to help each other in statistics, problem definition, and research design, and a common interest in relating research and development to needs in Vocational Education.

Representatives of the U. S. Office of Education were consulted several times during the Institute. Always they were very understanding of our difficulties and cooperated in helping us resolve them. We were visited once by a representative of

the U. S. Office of Education. He observed the class and reviewed the details of the proposal to make sure that everything was adequate and in order.

#### 4. Over-all Evaluation of the Program

Impressions of different aspects of the Institute have been alluded to throughout this report. There seems to be a general feeling that too little emphasis has been placed on the importance of research in education. This is especially true in Vocational Education. Few people in Vocational Education have been adequately trained to do research. Because of this fact very little manpower has been assigned to research and development activities in this area. Thus, there is a great need to develop an awareness of its importance and to involve competent people in research training programs pertinent to their needs. Such programs must relate to the pre-service and in-service training of professional personnel in Vocational Education.

It is recognized that an eight-week research training institute of this nature will not go very far in serving the tremendous need in Vocational Education for research-oriented people. However, if the right kinds of people can be recruited and trained, it will be a big step in the right direction.

It is the opinion of those responsible for this Institute that the objectives and content were sound. The trainees were well selected on the basis of their potential interest and research capability. It is anticipated that nearly all of them will make a significant contribution in developing an awareness of the importance of research and related activities to Vocational Education. It is expected that all of them will cooperate with the Kentucky Research Coordinating Unit in attaining its objectives.

All participants, except one, were enrolled in the Graduate School of the University of Kentucky and earned nine graduate credits in the Institute. The exception was able to earn three credits toward his baccalaureate degree. As an indication of the quality of students selected for this Institute, their grades were distributed as indicated in Table 3.

**TABLE 3. GRADES EARNED BY PARTICIPANTS IN THE RESEARCH TRAINING INSTITUTE, BY COURSES**

Grades	Courses		
	Education 573	Education 656	Education 695
A	8	17	24
B	21	12	5
C	1		
N/A		1	1

N/A means Not Applicable

The last day all participants were asked to give their opinions of the Institute. They were asked to complete a questionnaire as their last assignment. A copy of the questionnaire is included in the Appendix, page 83. The questionnaire was used to get an expression from the participants regarding their future research plans and their reactions to the Institute which might be helpful in planning such institutes in the future. As indicated previously, the participants worked on fourteen research, training, or developmental proposals during the Institute. Their answers to the questionnaire were as follows:

1) All participants said they would like to work on revisions of their proposal with the intention of getting support to carry out the projects. Fifteen participants said they would like to direct their projects if they were funded, and all except one were willing to assist someone else in carrying it out.

2) The entire group said they would definitely encourage their school, department, or institution to participate in research, training and developmental projects significant to Vocational Education.

a) Six in basic research

b) Eight in survey-type research

- c) Twenty-four in experimental, developmental, or pilot projects
- d) Six in training programs
- 3) As to their future educational plans -
  - a) One was working for the baccalaureate degree
  - b) Seven were working for the Master of Science degree
  - c) Eight wanted the Doctor of Education degree
  - d) Three wanted the Doctor of Philosophy degree
  - e) One was working at the post-doctoral level
- 4) As an outgrowth of this Institute, 27 intended to enroll in a class which would involve research.
  - a) Three theses
  - b) Thirteen special problems
  - c) Eleven dissertations
- 5) In working on research and development projects, 29 participants said they would like to consult with the Kentucky Research Coordinating Unit regarding their ideas and plans.
- 6) In selecting a research project, 26 participants said they would be willing to consider a segment of a larger research project for their problem. Only one said he would not be interested.
- 7) All participants thought the Institute was well worthwhile and said they would be willing to advise their colleagues to enroll in this type of institute if it were repeated.
- 8) Regarding the schedule of the Institute, the reactions of the participants were as follows:

- a) **Statistics** - Eighteen were satisfied  
 Eight recommended more time  
 Four recommended less time
- b) **Research Methods** - Twenty-four were satisfied  
 Four recommended more time  
 Two recommended less time
- c) **Research Design** - Fourteen were satisfied  
 Eleven recommended more time  
 Five recommended less time
- d) **Practicum** - Ten were satisfied  
 Sixteen recommended more time  
 Four recommended less time

9) Twenty-two of the participants thought the consultants were of great value to them, and eight considered them of some value. Twenty-five said the number of consultants used was about right, three recommended more, and two recommended fewer consultants.

10) Additional consultants were recommended in statistics, design, practicum, and the vocational education fields.

11) Only one field trip was taken. Opinions regarding it were:

- a) Eight - of great value
- b) Twenty-one - of some value
- c) One - of little value

Twenty-four participants recommended more field trips; six were satisfied with only one.

12) The question was asked, "What were the most valuable learnings gained during the Institute?" The answers were:

- a) Twenty - understanding Research Methodology
- b) Nine - appreciation of research
- c) Seven - designing a research problem
- d) Fifteen - understanding elementary statistics
- e) Eight - how to write a proposal
- f) Five - understanding the role of research tools
- g) Two - how to participate in research and development
- h) One - how to consult with the KRCU

13) The question was asked, "What do you see as your future role in the State program of research and development in Vocational Education?" The answers were:

- a) Fifteen - consumers of research findings
- b) Five - directors of research and development projects
- c) Five - participants in research and related activities
- d) Five - promoters of research and development projects

14) The question was asked, "What comments, criticisms, or suggestions do you have regarding this Institute or plans for a future one?" The answers were:

a) Present Institute

- 1) Too much pressure on the participants (9)
- 2) It could have been better organized (3)
- 3) Cooperation between teachers and students good (1)
- 4) Need for another staff member to help with individual statistics work (3)
- 5) Participants needed better mathematical background (1)

b) Planning a future Institute

- 1) Have problems selected before the Institute starts (1)
- 2) Schedule more time for preparing proposals (3)
- 3) Start working on proposals earlier (1)
- 4) Have research training activities other than in the summer (1)
- 5) Institute should enroll more than 30 people (2)
- 6) More practical application of statistics (5)
- 7) Schedule part of class time in the afternoon (1)
- 8) Schedule more time for the practicum (2)



9) Plan the Institute in two parts

1st summer - research methodology  
and design

2nd summer - combine methods and  
design with statistics

10) More time for statistics laboratory (3)

5. Recommendations to the U. S. Office of Education

My experience in working with the U. S. Office of Education pertaining to research training programs has been very satisfying. In regard to this Institute, only two requests made were rejected. A request was made for an allowance to purchase office supplies and to purchase basic textbooks for the participants. The reasons given for the rejections were accepted as good.

The only complaints I have regarding the policies pertaining to proposals for training institutes pertain to the short advance notices that have been received as related to the deadlines established for submitting proposals. However, this situation is improving.

Effective training institutes require careful planning, specific scheduling of personnel and facilities, and considerable time for the recruitment of trainees. These things require adequate lead time for organization and planning. They also require time to close out a project. Allowances for these things should be permitted in the project budget. Also, notification of approval of the project should give the project director the lead time requested in his proposal.

## PROGRAM REPORTS

1. Publicity. -- The Research Training Institute was publicized in news releases by the two Lexington daily newspapers on the basis of announcements from Senator John Sherman Cooper and Dr. Raymond Bard, Executive Director of the University of Kentucky Research Foundation, in May 1966; in the May - June, edition of the Kentucky School News, published by the State Department of Education, and in the June Newsletter of the Kentucky Research Coordinating Unit in Vocational Education. A copy of each of these announcements is in the Appendix, page 55.

Announcement of the Institute to prospective participants was made by preparing a brochure for distribution to administrators, supervisors, teacher educators, and teachers in Vocational Education in Kentucky. (See Appendix E-1, page 61). Also, the State Director of Vocational Education held a meeting of his Supervisory Staff specifically to explain the purpose of the Institute and to have them help inform eligible prospects about it.

Everyone who expressed an interest in the Institute, and was considered a good prospect was mailed a form entitled, "Directions for Making Application to Attend the Research Training Institute in Vocational Education." (See Appendix F-1, page 66). Those who wanted to be considered as applicants were mailed an application form prepared for the Institute. (See Appendix G-1, page 69).

As a check on those who filed an application, the persons they listed as references were requested to write a letter relative to the applicant's potential research capability and interest in participating in research and related activities. Everyone accepted for the Institute was informed of that fact by letter. (See Appendix H, page 73).

2. Application Summary. -- Interest in the Institute exceeded expectations as was evidenced by the large number of inquiries.

a) Approximate number of inquiries from prospective

trainees (letters, phone calls, personal visits, and conversations at professional meetings)----- 200

- b) Number of completed applications received --- 40
- c) Number of applicants who were well qualified----- 38
- d) Number of applicants who were offered admission ----- 30

3. Trainee Summary. --

- a) Number of trainees initially accepted in the program----- 30
- Number who enrolled at the beginning of the program ----- 30
- Number who completed the program----- 30
- b) Categorization of trainees
  - 1) Number of trainees who were principally public secondary school teachers -- 15
  - 2) Number from State Department of Education ----- 8
  - 3) Number of trainees from colleges, universities, junior colleges, research bureaus, etc., state universities ----- 7
  - 4) Others ----- None

4. Program Director's Attendance

- a) Number of instructional days for the program ----- 40
- b) Number of days the director was present ---- 39

2

5. Financial Summary

	<u>Budgeted</u>	<u>Expended or Committed</u>
a) Trainee Support		
1) Stipends	\$18,000.00	\$18,000.00
2) Dependency allowance	5,400.00	3,990.00
3) Travel	720.00	424.00
b) Direct Costs		
1) Personnel	6,368.00	4,166.00
2) Supplies	400.00	197.94
3) Equipment	820.00	784.00
4) Travel	650.00	485.56
5) Other cost	25.00	325.00*
c) Indirect Costs	<u>2,591.00</u>	<u>2,262.48</u>
Total	\$34,974.00	\$30,634.98

\* Transferred from Personnel \$300.00.

Appendix A

News Release  
May, 1966

Copy

RESEARCH TRAINING INSTITUTE  
FOR VOCATIONAL EDUCATION SUPPORTED BY FEDERAL GRANT

Senator John Sherman Cooper, R-Ky., has reported the award of \$35,000, under Title IV of the Elementary and Secondary Education Act, to the University of Kentucky, for a Research Training Institute in Vocational Education.

Dr. Carl F. Lamar, Director of the project, said the Institute was planned for 30 persons in Vocational Education participating in research and development activities. The primary purpose of the Institute will be to increase the research and development understanding and capability of administrators, supervisors, teacher educators, and teachers in Vocational Education. The Institute will be conducted during the Summer term at the University of Kentucky.

-----  
News Release  
May, 1966

Copy

UNIVERSITY OF KENTUCKY AWARDED GRANT  
FOR RESEARCH TRAINING INSTITUTE

Raymond Bard, Executive Director of the University of Kentucky Research Foundation, today announced a grant award of \$34,974 for a Research Training Institute at the University of Kentucky this summer for selected persons in Vocational Education. The Grant was made by the U. S. Office of Education, under Title IV of the Elementary and Secondary Education Act.

Appendix B

Copy

Kentucky Department of Education

School News

Education - A Firm Foundation

Official Publication

Volume 4

Frankfort, Ky.

May-June, 1966

INSTITUTE TO BE HELD

This summer, a Research and Development Training Institute in Vocational Education, will be held from June 13 to August 12 at the University of Kentucky. Dr. Carl F. Lamar, director of the Kentucky Research Coordinating Unit, Division of Vocational Education, College of Education, University of Kentucky, announced that Federal support up to \$35,000 will be available under Title IV of the Elementary and Secondary Education Act. This will provide for the attendance of 30 trainees who hold leadership positions in Vocational and Technical Education. The State Department of Education, through the Bureau of Vocational Education, will cooperate in identifying problem areas and participants.

Dr. Lamar said the purpose of this Institute will be to increase the research competencies of these persons. This general objective will be realized by providing training for the participants in these specific areas:

1. Recognition of problems in Vocational Education
2. Design projects for the solution of instructional problems
3. Statistics to enable the participants to interpret reported research
4. Designing and reporting research proposals
5. Conducting in-service training programs

## Appendix C

Copy

Occupational Research and Development

### NEWSLETTER

---

Number 4    Kentucky Research Coordinating Unit    June, 1966

---

### SUMMER INSTITUTE

The KRCU will operate an eight-week Research Training Institute for Vocational Education personnel. The Institute has been approved by the U. S. Office of Education under Title IV of the Elementary-Secondary Education Act. Thirty people, representing all areas and levels of Vocational Education, have been selected for the Institute. Nine graduate credit hours can be earned by participants in the Institute. Courses included are statistics, research methodology, and research design.

Arrangements have been made for Dr. John K. Coster to serve as a visiting professor and teach research design. He is now moving from the University of Nebraska, where he was Professor of Agricultural Education and Educational Administration in the College of Agriculture, to North Carolina State University where he will serve as Director of the Center for Occupational Education, Research, Development and Training. Plans have also been made for several outstanding special consultants to work with the Institute. Dr. Allen Lee, Director of Research and Development in Vocational-Technical Education, School of Education, University of California, Berkeley, will spend two days working with members of the Institute on concepts of research and development. Dr. David Krathwohl, Dean of the School of Education, Syracuse University, and former Director of Research at Michigan State University, will serve as a consultant on the development of research proposals. Dr. Desmond Cook, Professor of Education at Ohio State University, will be a consultant on Program Evaluation Review Techniques (PERT).

Appendix D

Copy

Occupational Research and Development

NEWSLETTER

---

Number 5      Kentucky Research Coordinating Unit September, 1966

---

KRCU CONDUCTS SUCCESSFUL RESEARCH INSTITUTE

The KRCU conducted a Research Training Institute for selected persons in Vocational Education. The Institute was supported by Title IV funds from the Elementary and Secondary Education Act. It ran from June 13 to August 12 with a one-week recess for the State Vocational Education Conference. The 30 trainees enrolled represented all Vocational Education services. Fourteen problems were developed into research and development proposals by the trainees.

In addition to the KRCU staff, five consultants assisted with the Institute. Dr. John Coster, Professor of Agricultural Education and Educational Administration at the University of Nebraska, was employed to teach research design four weeks, but after teaching one week, he became ill and had to quit. Dr. John Rowlett, Dean of the School of Technology, Eastern Kentucky University, replaced him. Dr. Rowlett taught the last week of the Institute. Drs. Allen Lee, University of California, Berkeley; David Krathwohl, Syracuse University; and Desmond Cook, Ohio State University, served as consultants.

Those enrolled in the Institute and their area of specialization were: Agriculture - Roy Giehls, Jr., Jerry Greer, Robert Hendon, William Joiner, Charles Neel, Charles Wade, Samuel Whitaker, and James Wilds; Business and Office - Charles Bright, Peggy Harris, Lela Hulette, Jean Karsner, Lucy Spiceland, George Vanover and Sue Young; Distribution - Robert Crawford and Robert Talbott; Health Occupations - Margaret Faris, Doris Schmidt and Mildred Winkler; Home Economics - Reva Bishop, Sue Fairless, Shirley Price, Donnalie Stratton, Helen Underwood and Mildred Williams; and Trades and Industry - Charles Gibson, Clifton Lemons, Thomas Myers, and Eugene Smotherman.



Appendix E-1

Copy

(Brochure that was distributed)

A  
RESEARCH AND DEVELOPMENT  
TRAINING INSTITUTE  
IN  
VOCATIONAL EDUCATION

June 13, 1966  
to  
August 5, 1966

The Kentucky Research Coordinating Unit  
Division of Vocational Education  
College of Education  
University of Kentucky  
Lexington, Kentucky

in cooperation with the

United States Office of Education  
under Title IV of the  
Elementary and Secondary Education Act  
of 1965

Appendix E-2

A

RESEARCH AND DEVELOPMENT

TRAINING INSTITUTE

IN

VOCATIONAL EDUCATION

June 13, 1966  
to  
August 5, 1966

Stipends and Costs

Each participant will receive a stipend of \$75 per week plus \$15 per week for each dependent. In most instances this remuneration is considered exempt from Federal Income Tax. In addition, each participant will be paid travel expenses for one round trip from his home to Lexington at a rate of eight cents per mile. Participants will not pay any tuition for the Institute. Dependency allowances can be paid only if dependents reside in Lexington with the participant.

Course Credit

Participants who have been admitted to the Graduate School of the University of Kentucky can earn nine semester hours of graduate credit. Three hours can be earned in each of three courses - a methodology of research course, an educational statistics course, and a practicum in research and development techniques and application.

## Appendix E-3

### Objectives of the Institute

The general objectives of this Institute will be to increase the research competence of persons who are in positions of leadership in vocational and technical education. This general objective will be realized by providing training for the participants in these six specific areas:

1. Recognition of problems in Vocational Education, definition of those problems, and the identification of relevant variables in the problem situation.
2. Design of experimental and developmental projects for the solution of instructional problems.
3. Statistics to such a depth as to enable the participants to interpret reported research and to apply the more common statistical treatments to collected data.
4. Designing and reporting research proposals in such a form as to gain consideration for funding from in-state and extra-state agencies.
5. Conducting in-service training programs for the purpose of instructing the uninitiated in the interpretation and implication of completed research.
6. Recognizing similarities and differences in the design and applicability of experimental, pilot, and demonstration programs for the solution of problems calling for research and development in Vocational Education.

### Make application to:

Dr. Carl F. Lamar, Director  
Kentucky Research Coordinating Unit  
Division of Vocational Education  
College of Education  
University of Kentucky  
Lexington, Kentucky 40506

## Appendix E-4

Applications and transcripts should be submitted not later than May 13, 1966. All applicants will be notified of their acceptance or rejection on or before June 1, 1966.

### Eligibility

1. Applicants must be employed as administrators, supervisors, teachers, or teacher educators in Vocational and Technical Education at the time of their application.
2. Applicants should be interested in the development of programs of Vocational and Technical Education based on research findings and the improvement of existing programs of instruction on the basis of research gained information.
3. Applicants should have at least a limited academic background in research methodology and statistics.
4. Most applicants will be expected to hold the baccalaureate degree and to qualify for admission to the Graduate School of the University of Kentucky.
5. While a few persons who have in their academic and vocational careers demonstrated promise as research-oriented educators, but have not been awarded the baccalaureate degree may be accepted to the Institute, these persons cannot obtain academic credit at the University of Kentucky.
6. A recommendation and an expression of empathy for research in Vocational Education from an applicant's supervisor is mandatory for acceptance to the Institute.
7. Applicants will be accepted to this Institute solely on the basis of their ability to benefit from the program and their potential contribution to the profession, without regard to color or creed.

## Appendix E-5

### Staff

Dr. Carl F. Lamar, Director of the Institute and Director of the Kentucky Research Coordinating Unit in Vocational Education, College of Education, University of Kentucky

Dr. John K. Coster, Professor of Agricultural Education and School Administration, and Director of Research, The University of Nebraska

Mr. Daniel S. Arnold, Research Specialist, KRCU, University of Kentucky

Mr. William O. Hall, Research Specialist, KRCU, University of Kentucky

Misc Carol J. Van Tassel, Research Specialist, KRCU, University of Kentucky

Miss Norma Miller, Research Assistant and Librarian, KRCU, University of Kentucky

Mr. Frank S. Asbury, Research Assistant, KRCU, University of Kentucky

### Living Accommodations

Dormitory rooms will cost \$100 for the eight-week session. Convenient cafeterias will be open for reasonably-priced meals. The Family Housing Office will cooperate with participants who wish to bring their families in securing suitable living accommodations where they are available.

**DIRECTIONS FOR MAKING APPLICATION TO ATTEND  
THE RESEARCH TRAINING INSTITUTE IN VOCATIONAL EDUCATION**

The enclosed announcement and application form for the Research Training Institute in Vocational Education indicate a closing date of August 5, 1966. Because of the State Vocational Education Conference for teachers, teacher educators, supervisors, and administrators of Vocational Education to be held at the University of Kentucky July 29, classes for the Institute will not meet between July 23 and August 1. As a consequence, the Institute closing date will be August 12. The participants will be paid stipends and dependency allowances for the eight weeks June 13 to July 23 and August 1 to 12. During the week of the Conference, participants will be free to attend the Conference or to take care of other matters.

---

**All Applicants Must:**

- 1) Complete the enclosed form, "Application for the Research Training Institute in Vocational Education".
- 2) Forward an official transcript of all college work attempted.
- 3) Send both the application and transcripts of college credits to:

Dr. Carl F. Lamar, Director  
Kentucky Research Coordinating Unit  
Division of Vocational Education  
College of Education  
University of Kentucky  
Lexington, Kentucky 40506

## Appendix F-2

**NOTE:** The time of the receipt of the transcript is critical. Persons who have not been accepted to the graduate program before the opening date of the Institute will be unable to receive graduate credit for the course work.

### Applicants Who Desire Graduate Credit

At the time of their acceptance to the Institute, persons who have completed a baccalaureate degree and desire graduate credit, but have not previously been admitted to the Graduate School of the University of Kentucky, will be sent a form to use in applying for admission to the Graduate School. Their transcript, and application will be evaluated by the Graduate School. The minimum undergraduate grade-point average for admission to the Graduate School is an over-all 2.5 (basis of 4.0). This average is to include all courses attempted, whether repeated or not, on the undergraduate level. In addition, persons who have completed the master's degree must have a grade-point average of 3.2 on all course work completed at the graduate level.

### Applicants Who Have Previously Been Admitted to the Graduate School

Applicants who have previously been enrolled in the Graduate School of the University of Kentucky will need to reapply to the Graduate School if they have not been enrolled in the University within the past year. Such applicants should write the Graduate School for application blanks at the time of their acceptance to the Institute.

### College Graduates Not Desiring Degree Credit

Applicants who do not wish college credit for the courses offered in the Institute will enroll as non-degree students in the Graduate School. Application should be made to the Graduate School immediately upon acceptance to the Institute. Students who enroll for the Institute in this capacity are cautioned that courses taken can not be counted toward a degree at the University of Kentucky.

## Appendix F-3

### Applicants Who Are Not College Graduates

Some participants who are still working toward a baccalaureate degree may be accepted in the Institute. These participants must make application to the Registrar of the University as non-degree undergraduate students. Write the Registrar for application blanks at once and submit them upon acceptance to the Institute. Since the courses offered in the Institute are graduate-level courses, students in the above category cannot earn credit toward a degree offered by the University of Kentucky.



Appendix G-1

APPLICATION FOR THE  
RESEARCH TRAINING INSTITUTE  
IN  
VOCATIONAL EDUCATION  
KENTUCKY RESEARCH COORDINATING UNIT  
UNIVERSITY OF KENTUCKY

1. Name \_\_\_\_\_
2. Title or position \_\_\_\_\_
3. Home address \_\_\_\_\_  
  Street                        City                        State
4. Home phone \_\_\_\_\_
5. School or office address \_\_\_\_\_
6. Telephone \_\_\_\_\_
7. Age \_\_\_\_\_ 8. Number of dependents who will accompany  
you \_\_\_\_\_
9. Miles from your home to Lexington \_\_\_\_\_
10. Your area of specialization (Agriculture, Business, etc.)  
\_\_\_\_\_
11. Years in present position \_\_\_\_\_ 12. Total years of Edu-  
cational Work \_\_\_\_\_

Appendix G-2

EMPLOYMENT HISTORY

13.	Date		Name of employer	Address of employer	Title of highest postion held
	From	To			

---

ACADEMIC BACKGROUND

14.	College attended	From	To	Degree received	Major subjects
-----	------------------	------	----	-----------------	----------------

---

Have you had college-level courses in any of the following areas?  
If you check yes, indicate when, where, and describe briefly the  
most advanced of those courses.

15. Research Methodology  
yes

no

16. Statistics  
yes

no

17. Tests and Measurements  
yes

no

18. College Mathematics  
yes

no

Appendix G-3

19. Have you completed a thesis for a graduate degree or carried out other independent research studies?      yes;      no. If yes, indicate the title(s), when, and where the research was done.

20. To what professional organizations do you belong? \_\_\_\_\_  
\_\_\_\_\_

21. What periodicals and journals do you read on a regular basis?  
\_\_\_\_\_

22. What professional and academic honors have you received?  
\_\_\_\_\_

23. Test Scores (if available)

Graduate Record Exam: Quantitative      Verbal       
Advanced      Social Science       
Humanities      Natural Science     

National Teachers Exam     

Millers Analogies     

24. References:

Name

Address

Title

1. \_\_\_\_\_

25. Applicants should immediately request the colleges which they have attended to send transcripts to the address below. Persons who do not desire graduate credit for the summer's work should check here: \_\_\_\_\_.

26. Return to: Dr. Carl F. Lamar, Director, Kentucky Research Coordinating Unit, Division of Vocational Education, College of Education, University of Kentucky, Lexington, Kentucky.

Appendix H

UNIVERSITY OF KENTUCKY  
Lexington, Kentucky 40506

College of Education  
Vocational Education

I am happy to inform you that you have been selected to attend, on full stipend, the Research and Development Training Institute in Vocational Education to be held at the University of Kentucky June 13 - August 12. As you have been enrolled in the Graduate School of the University within the last calendar year, further action on your part for admission to the Institute is not necessary.

Registration for the Summer Term at the University will be held June 10 and 11 according to the enclosed schedule. You will need to register for three courses:

EDU 573  
EDU 656  
EDU 695

The Institute will meet for the first time at 8 A.M. on June 13 in Room S-208 of the Agricultural Science Building.

Because of other pressing matters, the Institute staff will be unable to be of much service to you in obtaining living quarters if you re-locate for the summer. This chore will be handled by the participant through the University Housing Office. Steps to acquire necessary accommodations should be taken immediately. If, in special cases, additional assistance is needed by you, do not hesitate to ask for it through the Institute staff.

If you have further questions, feel free to write <sup>or</sup> call us.

Sincerely yours,

Carl F. Lamar, Director  
Kentucky Research Training Institute

CFL:pwh

## Appendix I-1

### RESEARCH AND DEVELOPMENT PROJECTS PLANNED

The following studies were planned by the participants in the Research Training Institute in Vocational Education at the University of Kentucky this summer.

1. Employment Opportunities and Competencies Needed in Farm Occupations in Selected Counties in Kentucky
2. A Project for the Development of In-service Instructional Programs for Young Farmers Using Full-time Teachers
3. An Experimental Approach to the Determination of the Relative Effectiveness of Programs in Home Economics at the Junior High School Level
4. A Coordinated Regional Teaching System Utilizing Packaged Instructional Technology Via ETV as a Technique for Wide Field Dissemination of Quality Instruction in Industrial Education
5. An Experimental Comparison of Two Methods of Using Industrial Arts as an Approach in Teaching a General Education Subject in Elementary Schools
6. The Development, Demonstration, and Evaluation of an Experimental Pilot Training Program to Recruit Unemployed Persons for Training as Home Attendants
7. An Experimental Pilot Program to Test the Feasibility of Two Methods of Field Experience in the Organization of an Educational Program to Train Home Health Aids
8. Two Developmental Programs, Each Including a Training Institute and a Pilot Program, Designed to Test the Feasibility of a Conceptualized Program of Vocational Guidance Services

## Appendix I-2

9. **A Project for the Development of a Methodology for Determining the Programs in Need of Vocational Education, and the Curricular Content of Those Programs in a Geographic Area**
10. **Employment Opportunities in Off-farm Agricultural Occupations in Kentucky**
11. **An Assessment of Employment Opportunities in Kentucky Involving Electronic Data Processing**
12. **An Occupationally Oriented Pilot Project for High School Youth with Special Needs**
13. **Criteria for Establishing, Improving, and Evaluating Associate Degree and Baccalaureate Degree Programs of Vocational Education Teacher Education**
14. **A Pilot Program Oriented to the Farm Business Analysis Approach to Teaching Adult Farmers**

Appendix J-1

BIBLIOGRAPHY

EDUCATIONAL RESEARCH

(Some References Helpful in Educational Research)

- \*Adams, Georgia Sachs. Measurement and Evaluation in Education, Psychology, and Guidance. New York: Holt, Rinehart and Winston, Inc., 1964.

Agricultural Education Magazine

- Alexander, Carter and Burke, Arvid J. How to Locate Educational Information and Data. New York: Teachers College, Columbia University, 1950.

American Journal of Nursing

- \*Barlow, Melvin L. (ed) Vocational Education, the Sixty-fourth Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1965.
- \*Barnes, John B. Educational Research for Classroom Teachers. New York: G. P. Putnam's Sons, 1960.
- Barzon, Jacques and Graff. The Modern Researcher. New York: Harcourt, Brace and Company, 1957.
- Best, John W. Research in Education. Englewood Cliffs, New Jersey: Prentice - Hall, Inc. 1959.
- \*Borg, Walter R. Educational Research: An Introduction. David McKay Company, Inc., 1963.

Appendix J-2

Bulletin of the National Association of Secondary School Principals.

- \*Burchill, George W. Work-Study Programs for Alienated Youth. Chicago: Science Research Associates, 1962.
- \*Cochran, W. G. Sampling Techniques. New York: John Wiley and Sons, Inc., 1963.
- \*Collier, Raymond O. (ed) Research Design and Analysis. Bloomington, Indiana: Phi Delta Kappa, 1961.
- Corey, Stephen, M. Action Research to Improve School Practices. New York: Teachers College, Columbia University, 1953.
- \*Courtney, E. Wayne (ed) Applied Research in Education. Totowa, New Jersey: Littlefield, Adams and Company, 1965.
- \*Cox, D. R. Planning of Experiments. New York: John Wiley and Sons, Inc., 1965.
- \*Cronbach, Lee J. Essentials of Psychological Testing. New York: Harper and Brothers Publishers, 1960.
- Current Biography: Who's News and Why. New York: H. W. Wilson Company, 1940 \_\_\_\_\_.
- \*Downie, N. M. and Heath, R. W. Basic Statistical Methods. New York: Harper and Brothers Publishers, 1965.
- Educational Administration and Supervision
- Educational Film Guide. New York: H. W. Wilson Company, 1936 \_\_\_\_\_.
- \*Edwards, A. L. Techniques of Attitude Scale Construction. New York: Appleton - Century - Crofts, Inc., 1957.
- Encyclopedia Americana. New York: Encyclopedia Americana.



Appendix J - 3

Encyclopedia Britannica. Chicago, Illinois: Encyclopedia Britannica.

\*Fattu, Nicholas A. (ed) Simulation Models for Education. Bloomington, Indiana: Phi Delta Kappa, 1965.

\*Festinger, Leon and Katz, Daniel. Research in the Behavioral Sciences. New York: Dryden Press, 1953.

Flimstrip Guide. New York: H. W. Wilson Company, September, 1948 \_\_\_\_\_.

\*Gage, N. L. (ed) Handbook of Research on Teaching. Chicago: Rand McNally and Company, 1964.

\*Goldhammer, Keith (ed) Dissemination and Implementation. Bloomington, Indiana: Phi Delta Kappa, 1962.

\*Good, Carter V. Introduction to Education Research. New York: Appleton - Century - Crofts, Inc., 1959.

\_\_\_\_\_, Carter V. and Scates, Douglas E. Methods of Research: Educational, Psychological, Sociological. New York: Appleton - Century - Crofts, Inc., 1954.

Goode, William J. and Hatt, Paul K. Methods in Social Research. New York: McGraw-Hill Book Company, Inc., 1952.

\*Guba, Egon (ed) The Training and Nurture of Educational Researchers. Bloomington, Indiana: Phi Delta Kappa, 1965.

\*Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Company, Inc. 1965.

\*Guion, Robert M. Personnel Testing. New York: McGraw-Hill Book Company, Inc. 1965.

\*Hillway, Tyrus. Introduction to Research. Boston: Houghton Mifflin Company, 1964.

Appendix J-4

\*Hyman, Herbert. Survey Design and Analysis. New York: Free Press, 1965.

Industrial Arts Index, 1913 \_\_\_\_\_. A Subject Index to a Selected List of Engineering, Trade, and Business Periodicals, Books, and Pamphlets. New York: H. W. Wilson Company, 1913 \_\_\_\_\_.

International Yearbook of Education. Geneva: International Bureau of Education, 1946 \_\_\_\_\_.

\*Jahoda, Marie and others. Research Methods in Social Relations. New York: Dryden Press, 1951.

Journal of Educational Sociology

Journal of Psychology

Journal of Social Psychology

\*Kaplan, Abraham. The Conduct of Inquiry. San Francisco: Chandler, 1964.

\*Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1964.

\*Kratwohl, David R. How to Prepare a Research Proposal. New York: Syracuse University, 1966.

\*Lazarsfeld, Paul F. Organizing Educational Research. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964.

\*Lindquist, E. F. Design and Analysis of Experiments in Psychology and Education. Boston: Houghton Mifflin Company, 1953.

\*Lindquist, E. F. (ed) Educational Measurement. Washington, D. C.: American Council on Education, 1951.

Appendix J-5

\*McNemar, Quinn, Psychological Statistics. New York: John Wiley and Sons, Inc., 1962.

Mouly, George J. The Science of Educational Research. New York: American Book Company, 1963.

N. E. A. Journal. "Outstanding Education Books of \_\_\_\_\_." May issue.

N. E. A. Research Bulletin

\*Osgood, Charles E. The Measurement of Meaning. Illinois: University of Illinois Press, 1957.

\*Ostle, Bernard. Statistics in Research. Ames, Iowa. Iowa State University Press, 1963.

Quarterly Cumulative Index Medicus. Chicago, Illinois: American Medical Association, 1927 \_\_\_\_\_.

Rummel, J. An Introduction to Research Procedures in Education. New York: Harper and Brothers Publishers, 1958.

Ryans, David G. Characteristics of Teachers. Washington, D. C.: American Council on Education, 1960.

School Review. Chicago, Illinois: Department of Education, University of Chicago, 1893 \_\_\_\_\_.

Scott, William A. and Wertheimer, Michael. Introduction to Psychological Research. New York: John Wiley and Sons, Inc., 1962.

\*Selltiz, Claire and others. Research Methods in Social Relations. New York: Holt, Rinehart and Winston, Inc., 1964.

Shores, Louis. Instructional Materials an Introduction for Teachers. New York: Ronald Press Company, 1960.

Appendix J-6

Strunk, William, Jr. and White, E. B. The Elements of Style.  
New York: The Macmillan Company, 1959.

Taba, Hilda and Noel, Elizabeth. Action Research. Washington,  
D. C.: Association for Supervision and Curriculum  
Development, 1957.

\*Tate, Merle W. Statistics in Education. New York: The Mac-  
millan Company, 1955.

\*Travers, Robert M. W. An Introduction to Educational Re-  
search. New York: The Macmillan Company, 1958.

Turabian, Kate L. A Manual for Writers of Term Papers,  
Theses, and Dissertations. Chicago, Illinois: Uni-  
versity of Chicago Press, 1955.

\*Tyler, Ralph W. Basic Principles of Curriculum and Instruc-  
tion. Chicago: University of Chicago Press, 1950.

United States. Bureau of the Census. Statistical Abstract of the  
United States. 1878 \_\_\_\_\_. Washington: Government  
Printing Office, 1879 \_\_\_\_\_.

United States: Library of Congress. Processing Department.  
Monthly Checklist of State Publications. Washington:  
Government Printing Office, 1910 \_\_\_\_\_.

United States. Superintendent of Documents. United States  
Government Publications: Monthly Catalog, 1875 \_\_\_\_\_.  
Washington: Government Printing Office, 1895 \_\_\_\_\_.

Van Dalen, Deobold, and Meyer, William J. Understanding Edu-  
cational Research. New York: McGraw Book Com-  
pany, Inc., 1962 and 1966. Hill

Vertical File Index: A Subject and Title Index to Selected Pamph-  
let Material. New York: H. W. Wilson Company,  
1932 \_\_\_\_\_.

Appendix J-7

\*Walker, Helen M. Statistical Inference. New York: Holt, Rinehart and Winston, Inc., 1953.

Whitney, Frederick Lamson, The Elements of Research. New York: Third Edition, Prentice - Hall, Inc., 1953,

Who's Who in America: A Biographical Directory of Notable Living Men and Women. Chicago, Illinois: The Marquis Company, 1899 \_\_\_\_\_.

Who's Who in American Education: An Illustrated Biographical Director of Eminent Living Educators of the United States. New York: Who's Who in American Education, 1928 \_\_\_\_\_.

\*Winer, B. J. Statistical Principles in Experimental Design. New York: McGraw-Hill Book Company, Inc., 1962.

Young, Pauline. Scientific Social Surveys and Research. Englewood Cliffs, New Jersey: Prentice - Hall, Inc., Third Edition, 1961.

\* Available in the Vocational Education Research Resource Library

Appendix K-1

Enrollee \_\_\_\_\_

QUESTIONNAIRE

The Institute staff is interested in your future research plans and your reaction to the activities of the past eight weeks. This questionnaire has been designed to aid in evaluating your Institute and in the planning of future research training institutes. Your assistance in this endeavor will be greatly appreciated.

1. Regarding the proposal you worked on during this Institute:  
I would be willing:

a. to work on revisions and submission for funding

\_\_\_\_\_yes \_\_\_\_\_no

b. to direct the project if it were funded

\_\_\_\_\_yes \_\_\_\_\_no

c. to assist the director of the project

\_\_\_\_\_yes \_\_\_\_\_no

2. Would you encourage your school system to participate  
in Vocational Education research projects?

\_\_\_\_\_yes \_\_\_\_\_no

3. With which type of projects would you prefer to work?

\_\_\_\_\_basic research

\_\_\_\_\_survey

\_\_\_\_\_pilot, developmental, experimental

\_\_\_\_\_training

Appendix K-2

4a. Regarding your future educational plans:

My goal is to earn the following degree or degrees:

\_\_\_\_\_ M.S. \_\_\_\_\_ Ed.S. \_\_\_\_\_ Ed.D. \_\_\_\_\_ Ph.D.

4b. In your program do you anticipate enrolling in any class involving research?

\_\_\_\_\_ yes \_\_\_\_\_ no

If yes, what type or types:

\_\_\_\_\_ thesis  
\_\_\_\_\_ special problem  
\_\_\_\_\_ dissertation

4c. Would you consider consulting the KRCU regarding ideas for your research?

\_\_\_\_\_ yes \_\_\_\_\_ no

4d. Would you consider using a segment of a larger research project as the topic for your thesis or special problem?

\_\_\_\_\_ yes \_\_\_\_\_ no

5. Would you advise a colleague to enroll in this type of institute?

\_\_\_\_\_ yes \_\_\_\_\_ no

6. Regarding time allotted to the different segments of the Institute - which segments should have received more or less time.

a. Statistics

\_\_\_\_\_ more time \_\_\_\_\_ about the same time  
\_\_\_\_\_ less time

Appendix K-3

b. Methodology

\_\_\_\_\_ more time                      \_\_\_\_\_ about the same time  
\_\_\_\_\_ less time

c. Research Design

\_\_\_\_\_ more time                      \_\_\_\_\_ about the same time  
\_\_\_\_\_ less time

d. Practicum

\_\_\_\_\_ more time                      \_\_\_\_\_ about the same time  
\_\_\_\_\_ less time

7a. There were five consultants. Do you consider their contribution:

\_\_\_\_\_ of great value  
\_\_\_\_\_ of some value  
\_\_\_\_\_ undecided  
\_\_\_\_\_ of little value  
\_\_\_\_\_ of no value

7b. Would you recommend using:

\_\_\_\_\_ more consultants  
\_\_\_\_\_ about the same number  
\_\_\_\_\_ fewer consultants

7c. If you recommended more consultants, what area or areas should they represent?

8a. One field trip was taken. Did you consider this activity:

\_\_\_\_\_ of great value  
\_\_\_\_\_ of some value  
\_\_\_\_\_ undecided



Appendix K-4

\_\_\_\_\_ of little value  
\_\_\_\_\_ of no value

8b. Would you recommend an increase in such institutes as this?

\_\_\_\_\_ yes \_\_\_\_\_ no

9. What do you consider the most valuable thing you learned during the Institute?

10. What do you see as your future role in the state program of research and development? A consumer of research, a Director, etc.

11. We would appreciate any additional comments you have about the present Institute and any suggestions you may have for planning future institutes of a similar nature.