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ABSTRACT

This project was undertaken to study past and current experiences in undergraduate research, development, dissemination, and evaluation (RDD&E) programs in order to suggest specific courses of action to develop models for such programs. A survey of the literature was conducted, a nationwide survey made, and data collected from the six institutions currently operating such programs. Responses indicated that little or no private foundation support exists, all programs being federally funded. The techniques employed are questionnaire surveys of program directors, field interviews and observations of programs, and documentary analysis of research proposals and reports, all of which are reported in detail. Results indicate that there is a dire need for governmental support and funding of undergraduate research training programs, since most programs were terminated when federal funds were depleted. Program directors currently operating such programs were enthusiastic; they had good ideas and plans for present and future programs. The six programs currently in existence cannot possibly supply all the paraprofessional and preprofessional educational researchers who will be needed in the next ten years. The document includes the model program prepared as a result of the research, as well as copies of the instruments used in the survey. (MBM)

Final Report
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ANALYSIS AND EVALUATION OF UNDERGRADUATE RESEARCH TRAINING PROJECTS

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CHAPTER I

THE STUDY

JUSTIFICATION FOR THE STUDY

Increases in the funding of educational research, development, dissemination, and evaluation (RDD&E) programs during the 1960's produced a demand for newly trained personnel that has not been met adequately. Clark & Hopkins (1969) predicted that if educational R&D receives at least moderate funding during the 1970's the short fall of trained personnel in critical cases will increase unless additional attention is given to the cultivation of a steady supply of new personnel.

The underlying source of all manpower for educational RDD&E is undergraduate training. To date, only scant attention has been given to developing undergraduate programs as a source of RDD&E manpower or to an examination of the potential and the problems of specialized training at that level. Accordingly, this project has been undertaken to provide a survey of such past experience and of the current state of the art in undergraduate RDD&E training programs. Discussions regarding the successes and apparent shortcomings of a variety of programs, and suggestions regarding future directions in which undergraduate RDD&E training might proceed should aid the educational community in assessing this relatively undeveloped field, and in making knowledgeable judgements regarding actions that should be taken. It also is expected that the knowledge gained during the conduct of this project will enable the Drexel Consortium to suggest specific courses of action which will permit the development of model undergraduate educational RDD&E training programs.

RATIONALE FOR UNDERGRADUATE TRAINING IN EDUCATIONAL RDD&E

A factor which is very crucial to the success of any program to train educational RDD&E personnel is the quality of students who are recruited and trained in these programs. (Stanley, 1966; Guba, 1967). Education is a discipline which obtains the majority of its researchers (54 percent) from fields other than education (Bargar, 1965). A substantial number of productive educational researchers either do not major in education at all, or major in it only at the graduate level (Berelson, 1960; Bargar et al., 1965; Buswell, 1966; Clark, 1967). One cause of this problem is the undergraduate program itself, which has portrayed education as a collection of skills and techniques to be mastered, rather than an area for study and inquiry (Lazarsfeld and Sieber, 1964; Buswell, 1966; Sieber, 1966). Educational courses tend generally to focus on the teaching of methodology and the professional techniques pertinent to teachers' certification. The focus on instructional methodology rather than inquiry in undergraduate education at least partially explains the relatively low academic performance of undergraduate education students compared to that of students in other fields (Berelson, 1960; Rossi, Davis, and McKinlay, 1962; Davis, 1964). This also provides an explanation for the low percentage of education students entering the educational RDD&E fields.

Not only are education students low on motivation to pursue research oriented graduate study, they are also low on creativity or originality measures, comparatively high on conventionality scores, and have the lowest percentage (9%) in comparison with other fields of students expecting to do research as part of their future careers (Davis, 1964). A ranking of the anticipated graduate fields of study, by the percentage in the top fifth on the Academic Performance Index showed that students planning a future in the field of education have the third to the lowest rank (Davis, 1964). This poor academic ability of education majors against the production of educational researchers, especially when numerous studies (Roe, 1953; Fiduson, 1962; Cattell, 1963; Taylor and Barron, 1963) found eminent researchers across fields to be more

intelligent than the average adult. In 1966, Buswell found a negative relationship between majoring in education at the undergraduate level and future research productivity. Thus, Sieber (1968) advocates strongly and repeatedly that talented students should be recruited from the behavioral sciences and trained in educational research.

It has been found that the immediate pursuit of graduate study is related strongly to ultimate research and development productivity and that few male undergraduate education students go immediately to graduate school (Buswell, 1966). Due to other considerations, females who comprise a large percentage of the undergraduate population; tend to be less committed to education as a full-time, long-term career. Consequently, potential RDD&E talent is being lost.

In spite of the limitations described above, the proponents of recruiting talented students from education into undergraduate educational research training programs present convincing arguments. First, undergraduate education students constitute a sizeable source of potential recruits to RDD&E programs, and according to projection figures more personnel will be required than can possibly be recruited from related social science disciplines. Second, although as a group education majors perform poorly in academic subjects when compared with students in other fields, talented undergraduates can be found in colleges of education. Third, by enrolling in a college of education, talented undergraduates have made a prior commitment to the field of education and want to contribute to the solutions of educational problems.

Certain characteristics of graduate students and the graduate training also support the viability of undergraduate research training. Findings by Frymier (1959), Clark (1957) and Roe (1953) suggest that contact with research as a potential career at an early age is an important factor related to production of quality researchers. In the field of Education in particular, such factors as age and prior professional interests militate against the development of strong commitment to the initiation of or participation in research on the part of a large majority of graduate students.

The quality and quantity of individuals seeking to enter professional education particularly the educational research division is far less than the quantity and quality of students seeking professional careers in disciplines such as mathematics, chemistry or psychology. Talented undergraduates have not been attracted in sufficient numbers to this critical area of inquiry. An advantage of undergraduate RDD&E programs are their attractiveness to the more capable students enrolled in education. There seems to be some evidence to indicate that talented undergraduates do leave the College of Education primarily because they lack sufficient interest in teaching as a full-time career (Bargar, 1970).

Students who have completed course requirements in undergraduate educational research programs have found a variety of research positions available to them both in education and in other fields. A survey recently completed (Bargar and Hogan, 1969) of positions available in school systems in the State of Ohio indicates that jobs are available not only in the Columbus area, but in other large metropolitan school districts. Taking into consideration this demand, and the projection that by 1974 a serious over-supply of teachers will exist (Shea, 1969), it stands to reason that some of the currently talented undergraduate education sutdents should be offered an early opportunity to seek a career in educational research.

ORIGINAL OBJECTIVES OF THE STUDY

The overall objective of this study was to conduct a set of tasks leading to the publication of an analysis and evaluation of undergraduate educational research training programs. To effectively include all pertinent areas for such a study, it was felt that six tasks would be the main centers of active concentration.

Gather Data Relative to the Various Undergraduate RDD&E Training Projects Under Design, Development or Operation; and RDD&E Manpower.

This task would involve the identification of past and current undergraduate RDD&E training projects and the systematic collection of pertinent data from the various institutions that participated in the design, development, and/or operation of such projects. It also was to include the collection of information resulting from related manpower studies. The data gathered was to include available information regarding:

Forms and types of training
Participating institutions
Location(s) at which each project was or is, being conducted
Concepts that guided design and development of the project
Skill analysis data
Recruitment methods.

Data also was to include available evaluation information which indicated the success and problem areas relative to each project.

Catalog, Analyze, and Evaluate the Information Gathered

The information gathered was to be catalogued according to project and subject matter, analyzed to determine its completeness and adequacy, and then evaluated. The evaluation process was to include a thorough review of data leading to identification of those concepts in undergraduate RDD&E training which appear to have the most promising potential for future application. Manpower data was also to be reviewed and evaluated to enable development of quantitative/qualitative requirements for RDD&E paraprofessionals and professionals.

Develop Standard Definitions for the Occupational Titles: Researcher, Developer, Disseminator and Evaluator

Based on results of the analysis and evaluation of RDD&E projects and manpower data, a definition of each of the RDD&E occupational terms was to be developed which could be used by the educational community as standard terms. The definitions would indicate the different shades of meaning for each term as it is used to denote the different paraprofessional and professional-level personnel. These definitions would be both concise and definitive.

Prepare Textual Material Describing State-of-the-Art Undergraduate RDD&E Training Activities and Needs

This task was to include the preparation of edited draft textual material, ready for final copy preparation, providing currently available data relative to the field of undergraduate RDD&E training. This material was to be presented in a form suitable for dissemination to the educational community, and was to include:

Definitions of occupational titles
Description of the various projects already undertaken or being conducted including forms and types of training
A discussion of the training concepts relative to each project

Evaluation of the successes and problem areas pertinent to each project

Recruitment methods

A description of the related RDD&E manpower situation

The material on manpower was to include available information based on an analysis and evaluation of the task analysis data gathered, regarding current manpower tasks relative to each occupation. It was also to suggest possible realignment of these tasks. Included would be information on current, and forecasted future supply and demand for each RDD&E occupational category and level.

Develop Presentation Material and Participate in the Conduct of a Symposium

The fifth task was aimed at developing verbal presentation material and draft graphics and handout material, which presented a summary of the information to be included in the publication material listed in the previous task. This also included active participation in symposium which concerned itself with RDD&E activities.

Prepare a Plan for Design, Development, Pilot Test and Evaluation of an Undergraduate RDD&E Training Program

The final task was to develop a plan for the design, development, pilot test and evaluation of an Undergraduate RDD&E Training Program. In the development of this plan, consideration was to be given to potentially promising concepts noted as a result of the data analysis and evaluation tasks described above.

DELETIONS AND MODIFICATIONS

As the literature review was being conducted it became clear that the study would have to be modified and some of the tasks deleted. The emphasis on the task involving the collection of data on RDD&E manpower, including skill analysis data, and quantitative/qualitative requirements for RDD&E paraprofessionals and professionals was significantly reduced and for all practical purposes deleted. One of the first findings was that the AERA Task Force on Training Research and Research-related Personnel and some university based groups (e.g., The Indiana University Research Foundation) were well underway in the conduct of long-range studies of manpower needs in educational research and research-related areas and the competencies required of role occupants in such areas. Consequently, it was decided not to duplicate these efforts and to gather only manpower data which was essential to our primary objective.

Similarly the Task to "Develop Standard Definitions for the Occupational Titles: Researcher, Developer, Disseminator and Evaluator" was modified. As evidenced in national educational research symposiums and publications, many definitions for educational research and educational researcher, development and developer, etc. exist and have created disagreements among the faculty of the departments of education and of behavioral science departments within and between universities. It would have been almost impossible to obtain one standard definition for each occupational title which would satisfy all who are concerned. Therefore it was decided to survey the directors of URT* programs for their operational definitions and attempt to develop a definition for each term which would most closely represent the composite opinions of those solicited.

* Undergraduate Research Training

Originally it was planned to visit each participating institution and personally interview the director and trainees. However, as the study progressed it was determined that some of the identified program directors were no longer at a given institution. In these cases, the URT programs had terminated when federal funds were suspended and the present school administration was often not familiar with the program as it originally existed. In addition, it would have been very difficult to locate the former trainees. Hence it was decided to personally interview the directors and present and former trainees of currently operating URT programs. Because of his proximity to an institution with a current program, one director of a defunct program was interviewed. Therefore interviews were held with directors and trainees at seven institutions.

Other task and objectives remain as originally specified.

CHAPTER II

REVIEW OF REPORTS RELATED TO UNDERGRADUATE RESEARCH TRAINING

Abstracts of lectures, papers, reports and studies related to undergraduate research training are presented in this chapter.

ABSTRACT: Course Development and Evaluation Techniques
Section I

National Symposium for Professors of Educational Research
November 11, 1970
Ohio State University
James W. Altschuld
Joseph S. Sakumura

Section I of this two part lecture was delivered by James Altschuld. Altschuld describes the introductory course of the undergraduate program in 1967 as an attempt to concentrate not only on methodology but also on the social context in which educational problems flourish. Research was related to both educational professionalism and educational change.

In the undergraduate program of 1967 and again in 1968, small group seminars were taught in conjunction with the first course. In 1968, it is noted that aside from the seminar activity, both undergraduate and graduate students attended the same lectures. Undergraduates and graduates participated in the same course. In addition to the course requirements, undergraduates had the following seminar assignments: (1) analyzing, in seminar, four published research studies; (2) abstracting three research articles of their own selection; (3) orally presenting rough drafts of their own research proposals; and (4) discussing rough drafts of proposals presented by other students in seminar. The seminar also served as a means of answering questions and reinforcing and clarifying crucial points from the lectures.

In Section II Sakumura explains an evaluation process Ohio State followed for their graduate program in the fall of 1968.

ABSTRACT: Proposal for an Instructional Educational Research and Development Program for Undergraduates

January, 1970
Dr. Robert Bargar

This first section of a four part report briefly presents the rationale, objectives, and structure of the program along with relevant evaluation data pursuant to its approval as a permanent program. The pilot program as initially established by Bargar was an attempt to determine to what extent undergraduates would be interested in training in Educational R&D and to what extent they would be successful in such training.

Bargar found that certain characteristics of graduate students and graduate training also support the viability of undergraduate R&D training. For example, contact with research as a potential career at an early age is an important factor related to the production of quality researchers. There also seems to be some evidence to indicate that bright talented undergraduates do leave the College of Education primarily because they lack sufficient interest in teaching as a full-time career line. Students may nonetheless retain a commitment to education, and if offered an alternative career route at the undergraduate level, it might be possible to retain their talents so badly needed in the profession.

Considering evidence both from group analysis and from anectodal records, Bargar reached the conclusion that the experimental program has clearly been successful. Its success justifies its continuation as a permanent part of the undergraduate curriculum of Ohio State.

ABSTRACT: The Development and Evaluation of Undergraduate and Graduate Research Curricula

American Educational Research Association
March, 1970

The Ohio State University
James W. Altschuld

In Section II of this paper, Altschuld elaborates on the evaluation design. Altschuld states that "Educational evaluation can be defined as the process of delineating, obtaining and providing useful information for judging decision alternatives." This definition implies that the evaluator in designing an evaluation must take into consideration: 1) the decision makers to be served; 2) the decision makers' informational needs i.e., what questions must be answered; 3) the establishment of the priority of importance of those questions; 4) how answers to the questions are to be obtained; and 5) how he will get the information so obtained to the decision makers. In this study it is important to note that the program has been in a continual state of development. Each year the program operation has seen changes in its size, content and instructional team. Decision makers and their informational needs also have changed; therefore, the evaluation designs utilized here differed from year to year.

ABSTRACT: The Development and Evaluation of Undergraduate and Graduate Research Curricula

American Educational Research Association
March, 1970

The Ohio State University
James W. Altschuld

In Section III Altschuld discusses the instruments used in the evaluation of training programs. One instrument was a questionnaire, the other was called the Research Orientation Index (or ROI).

The questionnaire attempted to assess student attitudes on a variety of concerns ranging from retrospective perceptions of courses liked in high school to current conceptions of research. The variables included in it are: 1) class standing; 2) type of student; 3) major field of study; 4) sex; 5) age; 6) future educational occupational plans; 7) highest level degree sought; 8) interest in future coursework; 9) interest in activities; and 10) attitudes toward the undergraduate educational program.

The Research Orientation Index, or ROI which assesses attitude toward educational research on an 82 item five point* Likert scale, was administered to large numbers of education students at Ohio State in 1967. From the item analysis a new 60 item scale, evenly balanced between positive and negative statements, was constructed and used for the evaluation of the second year graduate and undergraduate programs. In the total sample of 315 individuals the staff tentatively identified three groups: 1) students highly positive toward educational research; 2) students somewhat negative toward educational research; and 3) students who were thought to be somewhere in between negative and positive students. The ROI data of the three groups were analyzed separately and compared in an attempt to demonstrate the validity of the scale. The results tend to indicate that not only was the instrument reliable but that it also possessed some validity.

Starting in the second year the staff, in addition to studying the questionnaire variables and attitudes, was interested in the amount of research knowledge that a student possessed and his success in the program. New instruments were developed to measure these variables.

The Research Knowledge Index, or RKI, was derived from the Educational Research Competency Test of the Geauga (Ohio) County School District. It was used to identify the level of mastery of basic research principles as they relate to the understanding of empirical inquiry in education. For the test the research domain was divided into six areas* and a pool of 120 items was constructed. Thirty-nine of these items plus 11 constructed by the staff comprised the RKI that was used in the evaluation of the second year's program. The RKI was administered as pre- and post-test to the students in the program and to the various control groups used to evaluate program impact. The post-test results of the undergraduate and graduate students who completed the program were analyzed to determine which items were discriminating between good and poor students.

ABSTRACT: The Development and Evaluation of Undergraduate and Graduate Research Curricula

American Educational Research Association
March, 1970

The Ohio State University
Joseph S. Sakumura

Sakumura discussed the results of the first year's evaluation of the research and development program. Sakumura attempted to show that participation by talented undergraduate education students in the program effect their attitude toward educational research in a positive direction. These findings served as a basis for extending and enlarging the scope of the investigation during the second year. There are three major concerns in this evaluation study:

1) The prediction study,
2) Program development, and
3) The impact study

1. Prediction Study

It is possible to improve the present recruitment procedures for talented undergraduates and to develop placement procedures for graduate students into relevant research courses.

2. Program Development

A second major concern was the evaluation of the curriculum by the undergraduate and graduate participants. Their criticism and suggestiona played an important role in developing a program relevant to their needs and concerns.

In summary the program was modified by student's judgement of it. More fair, reliable and valid tests are being developed; the range of topics and the number of lecturers have been reduced and seminars have been instituted for graduate students.

3. Impact Study

A third major question dealt with the immediate impact of the program upon student's attitude and knowledge about educational research. This concern suggested an experimental or quasi-experimental design in which participants in the program, the experimental groups, could be compared with appropriate control groups.

Sakamura concluded that adequate recruitment procedures for undergraduates and placement procedures for graduate students can be developed. The next steps included instrument refinement, development of new instruments, enlargment of Criteria to include other measures of success both immediate and long-range. Ultimately, the hope is to discover selected variables which can be utilized to predict vocational commitment to research and research productivity.

ABSTRACT: Review of Research Related to Training for Research in Education

The Ohio State University Research Foundation
1967
Robert R. Bargar
Corahann Okorodudu
Research Associates:
Edward Dworkin
Irene Greenberg
Joan Sessions
Thomas John

The first part of this research paper deals with the production of researchers by schools of education. Emphasis is given to selectivity factors, such as student selection and faculty recruitment, and to institutional environment, with particular emphasis upon research climate. Several descriptive institutional variables are also discussed -- geographic location, institutional size and type of institutional control.

This section also dealt with the presentation of evidence concerning the inadequate production of researchers by schools of education, as well as an examination of institutional variables as effective antecedent or causative factors.

In spite of various other characteristics of institutions which appear to be relevant, it was shown that institutional selectivity is possibly the most critical antecedent in the production of researchers or scientists. Evidence presented included not only (1) the selection and recruitment of talented students and (2) institutional preferences of students, several studies suggest that recruits to education are lower than recruits to other fields both on ability and on motivation to pursue graduate study immediately and continuously.

The most active current aspect of institutional selectivity of students consists of admissions requirements such as a bachelor's or master's degree, previous grade point average in the "B" range, letters of recommendation, entrance examinations, and professional experience or teaching certificate requirements. These latter professional requirements are, however,

negatively associated with the development of researchers. It was also indicated that the importance in institutional selectivity to the production of researchers suggests the need to go beyond current selection procedures employed by schools of education in order to identify individuals with high research potential. Although intellectual abilities are important to the development of researchers, they may not be as decisive as non-intellectual attributes.

Finally, relative to undergraduate institutional origins, it was shown that researchers in education have tended to come predominantly from large, top quality, liberal arts divisions of public institutions located mainly in the East, North Central and Middle Atlantic states.

ABSTRACT: Investigation of Factors Influencing the Training of Educational Researchers

Ohio State University
May, 1970
Robert T. Bargar
Corahann P. Okorodudu
Edward P. Dworkin

The first part of this study summarizes the procedure used in compiling the review of research. It presents rather impressive evidence of the inadequate production of R&D personnel by schools of education. Bargar suggests that undergraduate students in the colleges of education represent by far the largest and potentially most significant pool from which to recruit persons into R&D training.

Bargar points out that it is probable that the production of inquirers if affected little by one or another aspect or type of training program. Indeed, the total institutional atmosphere may be the effective agent. Bargar then suggests several factors connected with undergraduate training in education which support the feasibility of his proposed program.

First, there seems to be some evidence to indicate that bright talented undergraduates do leave the College of Education primarily because they lack sufficient interest in teaching as full-time career line. These students may nonetheless retain a commitment to education and, if offered an alternative career route at the undergraduate level, it might be possible to retain their talents so badly needed in the profession. It can be noted here that some students presently completing the research minor do appear to follow this pattern.

Secondly, experience with the program during these first two years does indicate that there are sufficient numbers of undergraduates interested in and committed to the importance of research such as to warrant the establishment of the proposed program. There are also certain characteristics of graduate students and graduate training which support the viability of undergraduate R&D training. Contact with research as a potential career at an early age is an important factor related to the production of quality researchers.

Bargar then turns his attention to undergraduate education program attitudes in which he found that a review of the literature indicated that the very nature of undergraduate education programs has an inhibiting effect on the development of inquiry orientation. This was attributed to the notion that undergraduate education programs have usually treated education as a collection of skills and techniques to be mastered rather than an area for study and inquiry.

It seems feasible that if the research-development program were a success, then the negative attitudes that students had toward pertinent aspects of the undergraduate education program would be changed to positive attitudes. The following dimensions of the undergraduate education program were examined to ascertain the degree to which this attitude change had occurred: (1) appropriateness of course work in education in terms of professional interests; (2) appropriateness of course work in education in terms of academic and intellectual interests; (3) degree of freedom for self-direction; (4) degree of student-faculty interaction outside the classroom in the College of Education; and (5) proportion of instruction in education considered superior.

ABSTRACT: Recruitment for Inquiry in Education

Ph.D. Dissertation
The Ohio State University
1969
Edward Paul Dworkin

Dworkin points out that at the undergraduate level there is a negative relationship between majoring in education and future research-development productivity. Furthermore, it has been found that while hard-core researchers-developers in other fields tend to major in the same area both as undergraduates and graduates, a substantial number of productive educational researchers-developers either did not major in education at all, or majored in it only at the graduate level. In other words, education is one of the few areas that exercises the practice of borrowing many of its inquirers from other disciplines. Furthermore, the academic performance of education students at both the undergraduate and graduate levels does not compare too favorably with other fields.

There are several reasons for considering undergraduate education students a major source of recruits for training and involvement in educational research-development: (1) Undergraduate education students constitute a sizeable source of potential recruits to research-development programs, and according to projection figures we are going to need more personnel than can possibly be recruited from related social science disciplines. (2) Individuals majoring in education can be expected to have more than a primary commitment to the solution of educational problems than persons majoring in other fields. (3) Even more important, the negative relationship between majoring in education at the undergraduate level and future inquiry orientation need not exist; something can and should be done to resolve this situation.

After the first year of the undergraduate educational research at Ohio State, Dworkin found that even though it would be difficult to prove a casual relationship between the research-development program and the criterion measures, the conclusions reached with respect to each criterion variable and supported by the results of other investigations point to the feasibility

of offering a research-development program at the undergraduate level. The results strongly suggest that undergraduate research-development training can be an important means of recruiting talented undergraduate education students into careers directly or significantly related to inquiry in education.

ABSTRACT: An Analysis of an Experimental Research and Development Program for Talented Undergraduate Education Students

Ohio State University
1969
Joseph S. Sakumura

Sakumura tends to think that the rationale for an undergraduate research and development (R&D) program presupposes that the field of education is in a state of rapid change prompted by trends external to the educational enterprise and by efforts within the educational community.

He states that the USOE acknowledged the importance of talented undergraduates to alleviate the projected manpower shortage by funding 13 undergraduate research training programs. These programs were the first major systematic attempt to identify and recruit talented undergraduates. The programs recruited talented undergraduates from both allied social sciences and education. This recruitment was based on the philosophy that the development of adequate R&D programs are both necessary to foster career commitment in educational research. Prior to the federal programs, undergraduate R&D courses were nonexistent. Further, education courses focused upon methodology and professional techniques designed to meet certification requirements rather than stimulate intellectual interests in education as a field of inquiry. Furthermore, participation in and awareness of being able to conduct research was more important than any other factor in their decision to pursue a career in science. Thus, sufficient evidence exists to indicate that both the recruitment of talented students and the development of an adequate

undergraduate R&D program are needed to aid in the development of a continuous flow of educational researchers to attenuate the anticipated manpower shortage.

Sakumura then turns his attention to the undergraduate educational research program at Ohio State. The main objective of this Undergraduate Research Training program focused on enabling students to identify and articulate research problems and to use R&D knowledge and skills for decision-making and relevant modes of action.

Another goal of this program was to utilize selected variables to aid in the identification of other students who would succeed in the course. In the same vein, the long-range goal was to use these selected variables to identify students who would be vocationally committed to educational research and who would be productive researchers. Talented undergraduate education students were identified, selected and recruited for educational R&D programs.

ABSTRACT: Analysis of USOE Research Training Programs, 1966-67

Bureau of Applied Social Research
Columbia University
New York City
1968
Sam D. Sieber
With the Assistance of
William Speizman
Suzanne Langenwalter
Elizabeth Gemberling

Sieber's report covers the first academic year (1966-67) of the Educational Research Training Program of the USOE. The study was carried out with two objectives in mind. The first objective was to assess the initial year of operations and to lay the groundwork for a future, more intensive evaluation of the program's impact on research careers in education. The second objective was both more academic and more mission-oriented.

There are two sources of data that have been exploited--official documents and existing surveys. Official documents for administrative purposes included: personnel forms, proposals, progress reports, final reports, and official correspondence. Existing surveys included the information contained in the Trainee Report Forms and in the proposals for the Training Programs.

Sieber takes into account the fact that with the existing distribution of talent, the USOE has tended to allocate funds to institutions that already offer some type of program for research training for the talent that creates programs also attracts new funds. Sieber thinks that this process demonstrates how it is possible for better institutions to get better, and for poorer institutions to get poorer, as a consequence of federal funding practices.

> "The solution to this dilemma would seem to lie in strengthening the programs that have been initiated in weaker institutions, and initiating programs in the stronger institutions where they do not exist. In this way, the first sign of talent and motivation in the weaker institutions can be nurtured, thereby reducing the risk of funding these institutions; and the talent that is already known to be available in the better institutions can be exploited."

He goes on to state that his study indicates that better schools with past programs are more likely to be funded for new programs than better schools without past programs and that poorer schools with past programs are less likely to be funded than the poorer schools without past programs. In other words, the relationship between a former program and new funds is positive among the better schools, but negative among the poorer schools.

Sieber also noted that the majority of undergraduate trainees were females which may mean that these students are not very likely to continue for advanced degrees in research fields, since the great majority of educational researchers are known to be males. Moreover, the over-

representation of males among the postdoctoral trainees (97 percent) who represent the most experienced researchers in our population, suggests a positive relationship between sex and research expertise. No doubt the large proportion of females in the Undergraduate programs reflects the greater attraction of education as a field of study to women at the undergraduate level. In the context of undergraduate colleges of education, therefore, more aggressive recruitment of males might be necessary to avoid later attrition of researchers.

The last part of this report points out that almost half of the research applicants were located in non-education departments, compared with only a tenth of the graduate and undergraduate trainees. These statistics imply three things: (1) the training programs are not utilizing the full range of training talent in the universities; (2) the production of researchers by these programs will more than reproduce the traditional concentration of educational researchers within schools of education; and (3) the substantive fields in which research training is being provided tend to be fields of professional education.

Sieber also notes that his work reveals that undergraduate trainees less often aspire to a degree in professional education, and more often aspire to social science degrees, than the rest of the trainees. Thus, 57 percent of the undergraduates are seeking a degree in a field of professional education, compared with 75 percent of the graduate trainees. Twenty-six percent of the undergraduate trainees seek a degree in the non-psychological social sciences, compared with only 6 percent of the graduate trainees.

> "If the undergraduates were to enter Graduate training programs, therefore, they might decrease the proportion in fields of professional education and increase it in the social sciences. If their ranks were to be increased, then the concentration of trainees in professional education might be gradually rectified. In short, these figures give added weight to the importance of early (i.e., undergraduate) recruitment of students to careers in educational research."

CHAPTER III

PROCEDURES

IDENTIFICATION OF PARTICIPATING INSTITUTIONS

Three prime sources and a number of secondary sources were drawn upon to identify the institutions that are or have been participating in Undergraduate Research Training programs. Extensive use was made of the studies and reports by many of the authors listed in the bibliography. From these studies and from official USOE information, thirteen undergraduate research training programs supported by USOE were identified.* These thirteen schools were Arizona State, Eastern Kentucky, University of Florida, Grinnell, Macalester, Washington and Lee, University of Oregon, Northern Illinois, Memphis State, Purdue, Dakota Wesleyan, Iowa State and Towson State. A nationwide survey was then conducted to determine the current number of Undergraduate Research Training programs in the design, development, operation or completion stages. The population was identified by using the USOE's Bureau of Research Information Control Systems (BRICS). BRICS reports contain computed information about federally funded projects. These reports list the name of the insitution; the titles of all funded projects, studies, and/or programs; the total amount of government monetary participation; and in some cases, the name of the project initiator. BRICS reports were examined from fiscal years 1965 through 1970. A list was then compiled from these reports delineating the top one hundred colleges which have had federally funded programs relating to educational research during these years. In addition, the list contains the names of projects related to educational research and the location of the institution. (The location of the institution was included to prevent confusion in cases where states had more than one school with the same name.) See Appendix A for the complete list of institutions surveyed.

* Prior to the federally funded programs to train research-development personnel (Cooperative Research Act of 1954, and Title IV of the Elementary and Secondary Education Act of 1965) Undergraduate Rssearch Training programs were nonexistent.

The survey revealed that of the thirteen programs originally funded by USOE, only the Purdue program is still operating. Currently, there are five other undergraduate research programs which are known to be in operation.

These are located at The Ohio State University, University of Virginia, Tuskegee Institute, Drexel University and Bucknell University. The programs at Bucknell and Tuskegee are the only Undergraduate Research Training programs now being supported by USOE.

Since it had been established that there were on-going programs which were not federally supported, it was decided to explore foundation support. Letters were sent to four foundations - Kellogg, Ford, Rockefeller and Carnegie - requesting information about undergraduate research programs they had sponsored or were currently sponsoring. The responses received indicated that little or no private foundation support exists, and that no school that had not been previously identified from the BRICS reports is supported by these foundations.

Hence, this study is based upon all Undergraduate Research Training programs known to have existed. Appendix B lists these programs.

DATA COLLECTION TECHNIQUES

The techniques employed were questionnaire surveys of directors of undergraduate educational research training programs and trainees in these programs; field interviews and observations of currently operating programs; documentary analysis of research proposals and reports submitted to the Research Training Branch, U.S.O.E.; and secondary analysis of survey data collected in related studies. The contribution of each technique will be examined.

Documentary Analysis of Research Proposals and Reports Submitted to the Research Training Branch, U.S.O.E.

Proposals

Proposals for undergraduate educational research training programs generally tended to cover the following areas:

1. The rationale and objectives of the study
2. The overall program organization
3. The functional methodology of the program
4. The educational research curriculum
5. Institutional capability and support
6. Proposed budget

It should be noted that the above areas are general ones, modifications and changes existed within each proposal. The above listing does not; however, suggest that the order of sequence shown above is similar for all proposals.

Proposals, also indicated the project director and the date of project commencement as well as the title. Reading and reviewing proposals for this study proved

in grasping the overall concept that was to be initiated. It was also helpful in pointing out the weak and strong parts of the program; those areas which had been successful and those which proved to be faulty once the program was operating.

Preliminary and Final Reports

The preliminary and final reports served as indicators or measuring rods by which achievements and improvements within each project could be noted. In the same manner, these reports also evidenced areas of the program which were below expectation and needed to be changed or modified. In the latter instance, final reports proved to be very successful indicators. From review and interpretation of these reports came suggestions and recommendations which could serve as parts of a model for other undergraduate research programs yet to be established.

These reports were also used to design and develop categories and questions for the Director and trainee questionnaires used in this study. The questionnaires were designed to verify information found in the reports and to provide additional information which either was not sufficiently clear or detailed or was totally lacking in the reports.

The following areas serve as some indication of the general topics found in progress and final reports:

1. The purpose and objectives of the study in relation to the established rationale
2. The program in perspective, with consideration for operating activities

3. Educational research methodology and course work for the project

4. Program overview and evaluation

SURVEY RESPONSES

Pre-Survey Letter and Form

The pre-survey letter (See Appendix C) and form (See Appendix D) were designed to gather information pertaining to the number of colleges and universities that had Undergraduate Research Training programs and also to request permission to send Director and Trainee questionnaires.

The letter and form were mailed to the one hundred colleges and universities compiled from the BRICS reports mentioned earlier. Ninety-two of the one hundred schools responded.

Director's Questionnaire

This questionnaire was designed to encompass the following areas:

1. Current status of the undergraduate RDD&E training program
2. Essential training activities
3. Descriptive information about the training program
4. Detailed program information
5. Director evaluation of selected organizational and training aspects of the program
6. Operational definition of the occupational terms Researcher, Developer, Disseminator and Evaluator

Current Status of the Undergraduate RDD&E Training Program

Here the director was asked to indicate whether the program was in the design, development, or operation - activation stage.

Essential Training Activities

The director was asked to list the standard graduate and undergraduate courses and any special courses created which were essential to his program and to classify them in the following content areas: Sociological aspects, Psychological aspects, Statistics, General Research, Evaluational and Measurement Procedures and Integrational or capstone. Other training activities the Director was asked to consider were Practicum RDD&E activity, field trips and visiting specialist.

Descriptive Information About the Training Program

The Director was asked to indicate the rationale or philosophical bases for program design; to describe the general objectives of his training program; to list the specific objectives and classify them in the following areas: knowledge, application and orientation; and to indicate the types of employment or advanced training trainees were being prepared for.

Detailed Program Information

Included in this category are specific closed response questions which allowed the director to respond by putting a check mark in the proper blank. Items in this section were designed to determine the relative percentage of total RDD&E program efforts devoted to each possible R,D,D, or E component, the financial base or means of sustaining the program once operational, amount and type of trainee support, other resources facilities and enrichment activities, number of staff devoting some percent of their time to the program, full time equivalence of involved staff, institutional setting, professional areas or disciplines represented by the trainees, methods of

recruitment used, trainee selection criteria, number of trainees in the program, particular emphasis placed on some specific content areas or types of material, plans for combining training programs or activities from several areas or disciplines, degrees awarded, amount of outside funding for three or more recent projects in director's department and director's plans for evaluation.

Director Evaluation of Selected Organizational and Training Aspects of the Program

Questions in this section were constructed to determine the director's evaluation of aspects of the program pertaining to the difficulty of developing particular RDD&E training components in the program, his intent to change, eliminate or reduce emphasis on one or more training components and the reasons for doing so, the most productive training activities, the least productive or effective activities and the percent of trainees completing his program who go on to graduate work in educational research.

Operational Definition of the Occupational Terms Researcher, Developer, Disseminator and Evaluator

In this section the Director was asked to give his operational definitions and indicate the skills and competencies that one occupational category should possess.

The questionnaire was administered to one of the program directors as a pretest or trial run. Based on suggestions from the director and other experts in the field modifications were made.

The final form of the Director's questionnaire (See Appendix F) was administered to six of the program Directors and a panel of Consortium members completed the questionnaire for the other twelve colleges and universities from project final reports and proposals.

Trainee Questionnaire* (See Appendix G)

This questionnaire was constructed to encompass four general areas:

1. General information
2. Descriptive information about the training program
3. Trainee ratings of training experiences and
4. Organization orientation aspects of the program

General Information

This category sought trainee information such as how trainees first heard about the program, what encouraged the trainee to participate, undergraduate major and career plans.

Descriptive Information about the Training Program

Trainees were asked to describe the kinds of backgrounds participants should have before enrolling in the program, the nature and extent of their instructional and/or "professional" relationships with their research advisor, the changes which would be beneficial to future programs, and their special research project(s), if any.

* The questionnaire design used in Chamberlain's study (17) proved to be a functional tool to collect data about trainees in Undergraduate Research Training programs.

Trainee Ratings of Trainee Experiences

The training experiences were those that were indicated in the proposals and reports as being included in the undergraduate educational research training program. Included were classes in statistics, classes in research design and methodology, classes in professional education, trainee seminars, periodic reports, researcher/trainee seminars, field trips, trainee research project trainee relationships to advisor, trainee relationships to other trainees, classes in area of specialization, off campus practicum and assigned readings.

Selected Organization and Orientation Aspects of the Program

Items in this section were designed to determine what the trainees thought about aspects pertaining to the clarity of program objectives, realism of the objectives, organizations of the program, ease of interaction of trainees and its value, amount of practicum required, ease of trainees interaction with advisors and its value, trainee role in planning future training activities and such evaluative items as to whether the time spent in the program was worthwhile from a standpoint of a future career and if the program encouraged them to plan a career in educational research.

Most of the items were of a closed response type with evaluative items allowing four or five point rating scales. The instrument was intentionally kept as compact and efficient of the respondents' time as possible, ultimately resulting in 36 items.

The trainee questionnaire was administered to five trainees as a pretest on trial run. Based on difficulties encountered by the trainees in completing the questionnaires modifications were made. The revised form was administered to thirty-five trainees.

Field Interviews and Observations of Currently Operating Programs

Questions (See Appendix H) which were omitted from the questionnaire but which on later reflection seemed important were used as the bases for the interviews. In addition by interacting with the Directors and Trainees, we were able to obtain an identity with many of the sentiments they expressed.

This approach enabled the collection of some of the most important information gathered during this study. Even the preliminary analysis of some of the questionnaire results failed to suggest the importance of results obtained from field interviews and observations. Information on the following items were obtained:

1. Program organization and orientation
2. Trainee research orientation
3. Stability of the training program
4. Director's leadership style
5. Actual incentives and recruitment methods used
6. The degree of interdepartmental cooperation
7. Research climate and activity
8. Research resources and facilities
9. Popularity and exposure of Undergraduate Research Training program.

Twenty-six trainees and six project directors (See Appendix I) were interviewed personally.

Secondary Analysis of Related Research Reports

The data gathering instruments previously mentioned were also supplemented by research reports of related studies. Such studies furnished a comparative frame of reference for an analysis of educational research from its development through its present status. The comparative data obtained from these various studies furnished a basis by which valid assessments could be made with regard to the present investigative findings. These documents helped substantiate questionnaire findings as well as the other conclusions reached via other data gathering instruments. These selected documents went one step further, however in relating the various combined avenues of educational research as well as the overall picture.

In addition, some institutions provided self-evaluations of their Undergraduate Research Training programs. These documents provided evidence which supplemented pertinent questions in the questionnaire.

Content Analysis

A coded format for the Director's Questionnaire (See Appendix J) was developed to facilitate the compilation of data procured for a descriptive content analysis.

Categories were specified under each of the major headings of the Director's Questionnaire and an intercoder reliability test was performed by members of the Consortium.

CHAPTER IV

FINDINGS OF THE STUDY

A response was received from 92 of the 112 colleges and universities contacted. The percent of institutions that responded was 82.14. Eighteen of the colleges and universities that responded had or currently has an undergraduate RDD&E program which represents 16.07 percent of the institutions surveyed.

FINDINGS BASED ON THE DIRECTOR'S QUESTIONNAIRE

CURRENT STATUS OF THE PROGRAM

Table I describes the current status of the undergraduate RDD&E training programs. Information was sought relative to the stage of development of the program. None of the eighteen colleges or universities had programs in the design or planning stage. All of the programs were or are in the operation stage.

TABLE I

NUMBER AND PERCENT OF RESPONDING INSTITUTIONS WITH UNDERGRADUATE RDD&E TRAINING PROGRAMS IN THE VARIOUS STAGES OF OPERATION

Stage of Operation	Number of Institutions Responding	Percent of Responding Institutions
Under Design Stage	0	0.00
Development Stage	0	0.00
Operation Stage	18	100.00
Initial Period	(0)	(0.00)
Middle of the planned scheduled program	(1)	5.55
Near Completion and end of program	(1)	5.55
Established on-going program	(4)	22.20
Have completed such a program but no longer operating	(12)	66.60

Essential Training Activities

Chart A lists the standard graduate and undergraduate courses taken by trainees in the RDD&E training programs.

CHART A

GRADUATE AND UNDERGRADUATE
COURSES TAKEN BY RDD&E TRAINEES

I. GRADUATE

	Title	Content Area
a.	Research and Development	General Research
b.	Introduction to Inquiry	General Research
c.	Statistics	Statistics
d.	Research Training Seminar	General Research

II. UNDERGRADUATE

	Title	Content Area
a.	Educational Psychology	Psychological Aspects
b.	Curriculum Research	General Research
c.	Educational Measurement	Evaluational and Measurement Procedures
d.	Research Methods and Designs	General Research
e.	Fundamentals of Educational Research	General Research
f.	Statistics in Educational Psychology	Statistics
g.	Research Seminar	General Research

Table II gives information pertaining to RDD&E practicum activity. Data given here indicates the appropriateness of the selection of more than one item.

TABLE II

NUMBER AND PERCENT OF RESPONDING INSTITUTIONS WITH VARIOUS TYPES OF RDD&E PRACTICUM ACTIVITY

Practicum Activity	Number of Institutions Responding	Percent of Responding Institutions
Professor Initiated	7	38.85
Cooperatively Initiated	11	61.05
Student Initiated	4	22.20
Director Assigned	4	22.20

Information pertaining to field trips is given in TABLE III. Field trips by RDD&E trainees most frequently were to other research centers.

TABLE III

NUMBER AND PERCENT OF RESPONDING INSTITUTIONS THAT TOOK VARIOUS TYPES OF FIELD TRIPS

Field Trips	Number of Institutions Responding	Percent ot Responding Institutions
Other Research Centers	9	49.95
Conventions	5	27.75
School Systems	7	38.85

With reference to the inclusion of visiting specialists as part of the essential training activities, twelve institutions indicated that they had utilized the services of such individuals.

DESCRIPTIVE INFORMATION ABOUT THE PROGRAM

The rationale or philosophical bases for the designs studied can be briefly summarized under the following major headings:

Limited Funds
Need for Specific Training
Research Interest
Career Aspirations

Specific instances of rationale or philosophical bases from several of the institutions under the major headings indicated above are given in Chart B.

CHART B

RATIONALE OR PHILOSOPHICAL BASES FOR DESIGN OF RDD&E PROGRAM

I. Limited Funds Category

a. Program was designed because limited funds and programs for research and research training created the virtual absence of even research technicians in the Mid-South area thus making productive research difficult and too limited to be effective. An expanded college curriculum was needed giving more attention to courses in tests and measurements, statistics and research methods. Additional research personnel were needed at the University to train personnel to operate as technicians in research projects to precede the development of large scale, meaningful research projects.

II. Need for Specific and Systematic Training Category

a. Program was designed to offer systematic training for researchers who will handle problems and issues of education that have been sorely neglected by most colleges and universities responsible for the production of school personnel.

b. The importance of research in education and the need for some specific preparation in planning, conducting and interpreting the results of studies designed to provide answers to vital educational questions was the bases for design of one of the programs.

III. Research Interest Category

a. Program was designed primarily to motivate students in educational research.

b. Program was designed to interest students in educational research as a possible career; emphasis upon the future teacher's ability to interpret published research reports and to apply research techniques and systematic evaluation.

c. Program was designed to create positive attitudes toward selected aspects of an undergraduate education program and a committment to educational inquiry.

d. Program was designed for positive inquiry orientation.

IV. Career Aspirations Category

a. Program was designed to provide for occupational aspirations in the direction of future involvement in research-development activities in education.

b. Program was designed to provide for educational aspirations in the direction of going immediately to graduate school for advanced work in educational research.

General objectives for the research programs are given in Chart C. Directors were requested to refer to type of program and/or impact on education when listing the objectives.

CHART C

GENERAL OBJECTIVES FOR THE RDD&E PROGRAMS

I. To identify students to supplement their BA-BS degrees with programs in research so that they would be strongly predisposed to graduate in an area related to educational research.

II. To provide a program which would help develop those skills, knowledge and understanding in order to prepare graduates to assume educational research responsibilities. (Information specialists)

III. To provide an educational program at the bachelor's level that would prepare students to become educational researchers. (Graduate school)

IV. To increase the supply of trained researchers in order to carry on research aimed at optimizing teaching in local educational agencies.

The specific objectives of the RDD&E programs were classified as knowledge, application or orientation. These are presented in Chart D.

CHART D

SPECIFIC OBJECTIVES OF THE RDD&E PROGRAMS

I. Knowledge

a. to instruct students in basic methodology and technology in educational research.

b. to develop basic competencies in measurement techniques and statistical designs appropriate for research in an educational setting.

c. to exchange ideas with students from other disciplines and to consider and explore the relevance of these ideas to educational problems.

d. to develop favorable attitudes toward research in education.

e. to develop personnel capable of and interested in seeking better educational practices through empirical knowledge in the usage of research techniques by teachers to improve classroom instruction.

f. to teach participants to organize, collect, categorize and classify research studies.

II. Application

a. to offer training in basic methodology in research to create an appreciation for the role of research in education.

b. to involve students in both individual and group research projects of various modes of design and stages of progress.

c. to instruct students in basic methodology and technology desirable as prerequisites for graduate training in an area related to educational research.

d. to instruct students in the interpretation of research reports and the application of research techniques.

e. to help students to conduct individual research in a particular discipline with emphasis on its educational aspects.

III. Orientation

a. to help students come in contact with professors who are actively engaged in educational research.

b. to help students to consider a basic committment to an educational research career.

c. to guide potential researchers to select elective courses preparatory to pursuing an intensive research orientation program.

d. to encourage the undergraduate to continue to be active in educational research after graduation.

e. to introduce outstanding students to research procedures

Figure I gives information pertaining to the types of employment or advanced training for which the trainees are prepared.

FIGURE I

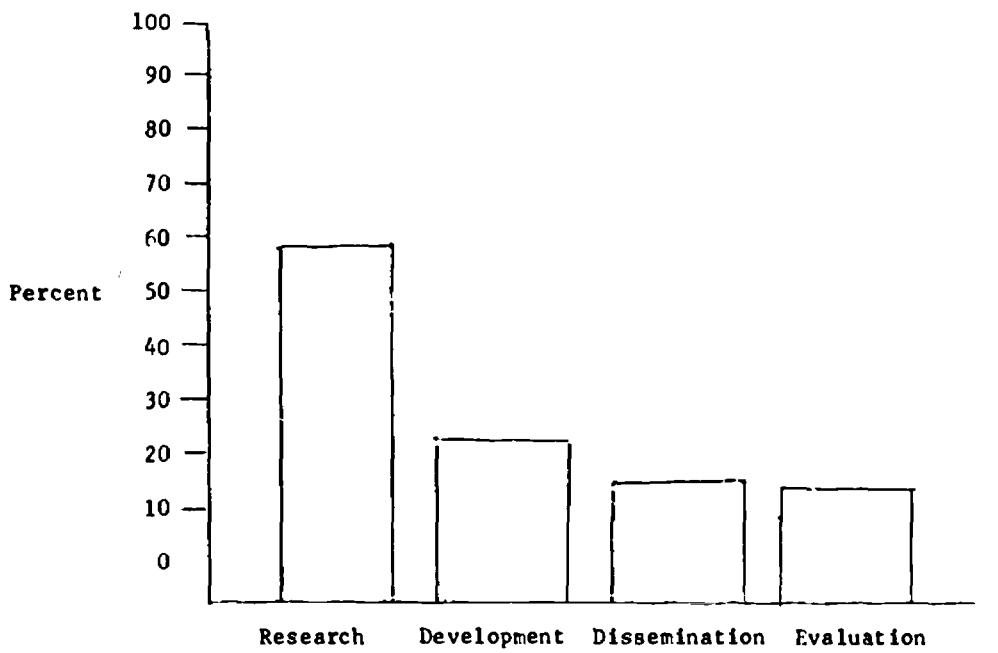
EMPLOYMENT OR ADVANCED TRAINING FOR WHICH RDD&E TRAINEES ARE PREPARED

Employment	Advanced Training
1. State and Local Educational Agencies	1. Choice of Discipline in Graduate School
2. Industry	2. Pursue Graduate Training in Educational Research or Related Fields
3. Teaching Assistants	
4. Research Assistants	
5. Information Specialists for School Systems	
6. General Educational Research and Evaluation in School Systems	

Directors of programs were asked to indicate the relative percent of the total RDD&E program efforts that were devoted to each component regardless of its stage. This information is given in Figure II.

FIGURE II

AVERAGE PERCENT OF EFFORT DEVOTED TO RDD&E COMPONENTS BY RESPONDING INSTITUTIONS



Most programs had largest efforts devoted to the research component. Information concerning percents of efforts in the various components was unattainable for eight of the programs.

DETAILED PROGRAM INFORMATION

Detailed program information is summarized in Tables IV through XIX.

Table IV summarizes the financial basis or means of sustaining the program once operational.

TABLE IV

FINANCIAL BASE FOR SUSTAINING THE RDD&E PROGRAM

TYPE of Funding	Number of Responding Institutions
Outside Funding	13
Government	(12)
Private	(1)
University Funding	3
University and Outside Funding	2

The amount and type of trainee support is presented in Table V.

TABLE V

TRAINEE SUPPORT

Kind of Support	Number of Responding Institutions	Average Amount per Semester
Stipend	8	$265.00
Tuition Relief	0	
Variable/Incidental	1	$500.00
No Financial Remuneration	1	

Information pertaining to trainee support was not indicated by eight of the institutions that had or have undergraduate research training programs.

Table VI indicates resources, facilities and enrichment activities which are part of the trainees program.

TABLE VI

RESOURCES, FACILITIES AND ENRICHMENT ACTIVITIES
OF THE RDD&E PROGRAMS

Activity	Number of Responding Institutions
Field Trips	10
Office Spaces	4
Computer Availability	9
Other	5

Activities included in "other" listed in Table VI are laboratories and special summer research projects. Multiple checks could be made.

Data pertaining to the number of staff devoting some percent of their time to the program is summarized in Table VII.

TABLE VII

NUMBER OF STAFF DEVOTING SOME PERCENT
OF THEIR TIME TO THE PROGRAM

Number of Staff	Number of Responding Institutions
1-2	1
3-4	2
5-6	5
7-8	2
9-10	2
11-12	2
13-14	0
15-16	1
17-18	1

The average number of staff who devoted some percent of their time to the program was eight. This number was based on a response from sixteen of the institutions that had or currently have an undergraduate research training program. Eight of the institutions indicated that the part-time staff was equivalent to from one to five full-time staff.

A description of the institutional setting is given in Tables VIII through XII.

TABLE VIII

GEOGRAPHICAL LOCATION OF
RDD&E TRAINING PROGRAMS

Location	Number of Responding Institutions
Northeast U.S.	3
Southeast U.S.	5
Mideast U.S.	3
Northwest U.S.	1
Midwest U.S.	5
Southwest U.S.	1

TABLE IX

SIZE OF INSTITUTIONS WITH
RDD&E TRAINING PROGRAMS

Number of Students	Number of Responding Institutions
0 - 5,000	6
5,000 - 10,000	2
10,000 - 15,000	3
15,000 - 20,000	3
20,000 - 25,000	2
25,000 - 30,000	1
30,000 - 35,000	0
35,000 - 40.000	1

TABLE X

DEPARTMENTAL ARRANGEMENTS

Arrangements	Number of Responding Institutions
Multidisciplinary	4
Interdisciplinary	4
Single discipline	10

TABLE XI

NUMBER OF INSTITUTIONS WITH A RELEVANT GRADUATE PROGRAM

Relevant Graduate Program	Number of Responding Institutions
Yes	10
No	4
Not indicated	4

TABLE XII

KINDS OF INSTITUTIONS RESPONDING

Kind of Institution	Number of Responding Institutions	Percent of Responding Institutions
Public	10	55.50
Private	8	44.40

Chart E gives information on the professional areas or disciplines represented by the trainees who participated in the undergraduate research training programs.

CHART E

PROFESSIONAL AREAS OR DISCIPLINES
REPRESENTED BY TRAINEES

I. Education

II. Other disciplines
- a. Human, Behavior and Development
- b. Chemistry
- c. Sociology
- d. Design
- e. Nutrition
- f. Engineering
- g. Mathematics
- h. Psychology
- i. Economics
- j. Law
- k. Foreign Languages (Spanish, French, German)
- l. Statistics
- m. History
- n. Political Science
- o. Statistics
- p. Biology
- q. English
- r. Computer Science
- s. Anthropology

TABLE XIII

METHODS OF RECRUITMENT OF TRAINEES FOR THE RDD&E PROGRAMS

Methods of Recruitment	Number of Responding Directors who used Method	Percent of Responding Directors
Sales letter	3	16.65
Notices on Bulletin Board	4	21.10
Ads in School Newspapers	4	21.10
Personal (direct)contact	12	66.60
Referrals	8	44.40
Normal Admission Procedures	3	16.65
Handouts in Classes	2	11.10
Brochures	1	5.50

TABLE XIV

TRAINEE SELECTION CRITERIA

Selection Criteria	Number of Responding Directors who used Criteria	Percent of Responding Directors
Grade Point Average	13	72.15
Standardized Achievement and Personality Tests	6	33.30
Personal interviews	11	61.05
Research Orientation	13	72.15
1. expressed interest (11)		(61.05)
2. scale to measure orientation (2)		(11.10)
Faculty Recommendation	9	49.95
Course Work	5	27.75
College level or Academic Understanding	10	55.70

TABLE XV

NUMBER OF TRAINEES WHO BEGAN
RESEARCH TRAINING PROGRAM

Number of Trainees	Number of Responding Institutions with Given Number of Trainees	Percent of Responding Institutions
6-10	6	33.30
11-14	1	5.55
15-19	7	38.85
20-24	2	11.10
25-29	2	11.10

TABLE XVI

NUMBER AND PERCENT OF RESPONDING INSTITUTIONS THAT
PLACED PARTICULAR EMPHASIS ON SPECIFIC CONTENT AREAS
OR TYPES OF MATERIAL

Content Areas	Number of Responding Institutions	Percent of Responding Institutions
1. Methodological		
a. Problem conceptualization (Proposal writing) RDL&E	14	77.70
b. Type of RDD&E Research (case studies)	2	11.10
c. Design	14	77.70
d. Sampling (survey)	12	66.60
e. Measurement	15	83.25

TABLE XVI (Continued)

f. Statistics	14	77.70
g. Report Writing	13	72.15
h. Review of Literature	9	49.95
i. Library Skills	6	33.30
j. Data Processing	10	55.50
k. Project Evaluation	8	44.40
2. Other Substantive Areas		
a. Education	10	55.50
b. Psychology	8	44.40
c. Sociology	5	27.75
d. Anthropology	3	16.65
e. Economics	3	16.65
f. Other (political science and geology)	3	16.65

The most frequently used materials specified by the directors of the research programs were texts, human resources, computers; and video recorders.

Five directors indicated that they had plans for combining training programs or activities from several areas or disciplines. Three indicated that they had no such plans, one indicated that possibly it would be considered.

Degrees most frequently offered to participants in the programs were Bachelor of Arts and Bachelor of Science degrees in Education.

Four of the responding directors indicated that their advanced trainees were permitted to take graduate level courses in research.

A summary of areas considered in the plans for evaluation by the directors of the programs is presented in Table XVII.

TABLE XVII

AREAS CONSIDERED IN PLANS FOR EVALUATION OF RESEARCH TRAINING PROGRAM

AREAS	Number of Responding Directors Considering Plans for Evaluation in Specified Areas	Percent of Responding Directors
1. Achievement of Performance objective by trainees		
a. Program organization and structure	9	49.95
b. Student grades on tests	11	61.05
c. Career plans	9	49.95
d. Teacher ratings	10	55.50
e. Attitudinal measures	5	27.75
f. Student evaluation	11	61.05
g. National Review Board	1	5.55
h. Anecdotal records	1	5.55
i. Autobiographical sketch	2	11.10
2. Staff Performance, Training Activities and Instructional Materials		
a. Student evaluation	7	38.85
b. Personal evaluation	4	21.10

Directors of the training programs were asked to specify the areas of their broad goals that were being considered in the evaluation. These were listed within the framework of knowledge, application and orientation. These are given in Chart F.

CHART F

BROAD GOALS CONSIDERED IN PLANS FOR EVALUATION

I. Knowledge
   a. Competency inventory of students
   b. Faculty and student evaluation of content
   c. Grades

II. Application
   a. Student faculty comment
   b. Trainee evaluation
   c. Direct research experience

III. Orientation
   a. Change in attitude survey
   b. Post tests to measure orientation

Figure 3 is a compilation of recent projects listed by responding program directors that were funded from outside the college or university.

FIGURE 3

RECENT PROJECTS FUNDED FROM OUTSIDE SOURCES FOR DIRECT AND INDIRECT SUPPORT OF TRAINING ACTIVITIES

Project Title	Date Project Initiated	Source	Funding
Development of Careers for Previously Unemployed	1968-69	Government	$11,000 - $20,000
Get Set	1966-67	Government	$31,000 - $40,000
Training Impoverished Adults	1970-71	Government	over $50,000
Project Sesame	1968-69	Title III and local public schools	$600,000
Continuous Progress Program	1965	Carnegie Corp.	$335,000
Behavioral Objectives Project	1969	USOE	$250,000
Development of New Measures of Cognition	1970	USOE	$111,000

DIRECTOR EVALUATION OF SELECTED ORGANIZATIONAL AND TRAINING ASPECTS OF THE PROGRAM

Four of the responding directors indicated that most of their effort had been devoted to the development of the research component, one indicated dissemination, one indicated development and twelve did not respond to the question.

Directors were asked to answer the following question: If you do not have all four training components (RDD&E) in your program, why do you intend to change, eliminate or reduce the emphasis on one or more?

The most frequently mentioned reasons given for change of emphasis were the following:

(1) increased emphasis on experimental research methods and design

(2) changing emphasis in university training

(3) changing conception of roles

(4) emerging theories

(5) research internship

(6) advance seminar

Information pertaining to training activities in the training programs that were most productive per director evaluation are given in Table XVIII. Those activities listed as the least productive or effective are given in Table XIX.

TABLE XVIII

TRAINING ACTIVITIES LISTED BY RESPONDING DIRECTORS
AS THE MOST PRODUCTIVE OR EFFECTIVE

Activity	Number of Responding Directors	Percent of Responding Directors
Internship Experience	7	38.85
Seminar	4	21.10
Lectures	3	16.65
Field Trips	2	11.10
Independent Project	8	44.40
Class Discussions	3	16.65
Informal Discussions	4	21.10
Class Projects	1	5.55
Cooperative Projects	3	16.65
Colloquiums	1	5.55

TABLE XIX

TRAINING ACTIVITIES LISTED BY RESPONDING DIRECTORS
AS THE LEAST PRODUCTIVE OR EFFECTIVE

Activity	Number of Responding Directors	Percent of Responding Directors
Field Trips	1	5.55
Lectures by Visiting Consultants	1	5.55
Conferences	1	5.55
Direct participation in laboratory school	1	5.55

OPERATIONAL DEFINITIONS OF THE OCCUPATIONAL TERMS RESEARCHER, DEVELOPER, DISSEMINATOR AND EVALUATOR

Directors were asked to give an operational definition for researcher, developer, disseminator and evaluator plus skills and competencies needed by each. These are summarized in Chart G.

CHART G

OPERATIONAL DEFINITIONS GIVEN BY RESPONDING DIRECTORS FOR RESEARCHER, DEVELOPER, DISSEMINATOR AND EVALUATOR

I. Researcher

a. Definitions

1. one who actively inquires about social or other problems.
2. one who conducts careful, initial designed and disciplined inquiry and who varies techniques and methods according to the nature of the problem identified.
3. one who performs state of the art analysis.

b. Skills and Competencies

1. design, philosophical orientation, measurement, and statistical techniques
2. identification, designing, observing and other data gathering skills, analyzing, interpreting and reporting
3. knowledge of theory and assumptions in area under study; clarification and evaluation of methods of inquiry; able to work with people.

II. Developer

a. Definitions

1. one who creates new tests or instructional materials.
2. one who is involved in the systematic process of inventing designing and/or packaging the components of programs, products and practices for specified outcomes.
3. one who programs advances in the state of the art.

II. Developer (continued)

b. Skills and Competencies

1. knowledge of specific skills to be programmed, knowledge of substantive subject matter; diagnostic skills; able to work with people

2. compentency in inventing conceptualizing, designing, constructing and evaluating.

3. knowledge of subject matter, instructional theory and formative evaluation

III. Disseminator

a. Definitions

1. one who arranges for field use of new tests and materials

2. one who systematically employs techniques designed to create awareness and beliefs which will facilitate adoption of specific practices by targeted populations in identified settings

3. one who coordinates efforts of educational development with work in tangential fields

b. Skills and Competencies

1. knowledge about social skills and administration

2. knowledgeable about identification of target populations, innovations and communicating

3. Ability to communicate ideas with requisite personnel and work; knowledge of on-going programs and ability to work with people

IV. Evaluator

a. Definitions

1. one who collects information which will permit answering development questions

2. one who implements the process of systematically describing and assessing the worth of specified goals, programs, practices, resources and institutions

3. one who coordinates the work of the researcher, developer and disseminator

IV. Evaluator (continued)

b. Skills and Competencies

1. knowledgeable about design, statistics and measurement

2. knowledgeable about designing, identifying, assessing, assisting, analyzing, interpreting and reporting

3. skills in directing team effort; knowledge of tests and measurements; ability to feed resultant knowledge to researcher, developer and disseminator; able to work with people.

FINDINGS BASED ON THE TRAINEE QUESTIONNAIRE

Thirty-five questionnaires were received from trainees at Bucknell University, Northern Illinois University, University of Virginia, Purdue University and Ohio State University. Twenty-six of the trainees were interviewed personally.

GENERAL INFORMATION

Table XX gives a summary of general information pertaining to the trainee and the undergraduate research training program.

TABLE XX

GENERAL INFORMATION OBTAINED FROM RESPONDING TRAINEES

I. How did you first hear of the research program?

A. Most frequently given responses	No of respondents	Percent of Respondents
1. From my educational psychology professor	10	29.90
2. Via letter sent by the director of the undergraduate research training program	9	26.91
3. From a friend or relative	4	11.96
4. From the director of the undergraduate research training program. (direct contact)	2	5.98
5. Mentioned when inquiry was made about admission to the college of education	2	5.98

TABLE XV (Continued)

II. What encouraged you to participate in the program?

A. Most frequently given responses	No. of respondents	Percent of Respondents
1. Stipend	7	20.93
2. Staff and program director made educational research sound interesting	5	14.95
3. Opportunity to be involved in some type of educational research	5	14.95
4. Exempted from summer school requirements	3	8.97
5. Opportunity to use knowledge previously learned.	3	8.97

III. What is your undergraduate major?

A. Major	No. of respondents	Percent of Respondents
1. Elementary Education	6	17.94
2. Mathematics	6	17.94
3. Educational Research	6	17.94
4. English Education	3	8.97
5. Sociology	2	5.98
6. Psychology	2	5.98
7. German Education	2	5.98
8. Chemistry Education	1	2.99
9. Special Education	1	2.99
10. Home Economics Vocational Education	1	2.99

CHART H

DESCRIPTIONS OF RESEARCH PROJECTS PARTICIPATED IN BY RESPONDING TRAINEES

I. Pretest of an experimental English program. Analyzed junior high school level compositions for specific grammar points.

II. Questionnaire type analysis of continuous progress courses.

III. Curriculum analysis in terms of social roles of persons questioned.

IV. Concept learning - use of negative instances in imposed risk situation.

V. Designed and executed statistical analyses for projects in microteaching, differentiated staffing and diverse cultural setting.

VI. The development of an instrument to measure committment to research.

VII. Exploration of the differences in cognitive styles of four-year old black children.

VIII. Study of readability and vocabulary skills. Developed a new readability formula and improved vocabulary work books.

IX. The design of a "culture free" text for deprived children in different cognitive aspects.

X. A comparison of linguistic ability with creative writing ability.

XI. Prediction of juvenile delinquency from data on third graders.

XII. An evaluation of a follow through program in a public school system.

XIII. Study of effect of same sex classroom grouping pattern.

XIV. Joint program study of some common personality variables of middle-class preschool age children.

XV. Evaluation of a music education research project.

XVI. An examination of factors relating to teacher morale.

XVII. An analysis of factors relating to innovative curriculum design.

XVIII. A development of behavioral objectives and to determine their effect on performance of students as compared to standard objectives.

XIX. The determination of which method of learning; visual-visual, visual-tactual, tactual-visual or tactual-visual, would be more effective with slow learners.

XX. A study of effects of reinforcement of performance on Peabody P.V.T.

DESCRIPTIVE INFORMATION ABOUT THE TRAINING PROGRAM

A summary of descriptive information about the training program is presented in Table XXI.

TABLE XXI

DESCRIPTIVE INFORMATION ABOUT THE TRAINING PROGRAM OBTAINED FROM RESPONDING TRAINEES

I.	Please describe the kinds of background participants should have before enrolling in the program?		
	A. Most frequently given responses	Number of Respondents	Percent of Respondents
	1. Good Mathematics background	3	8.97
	2. Background in statistics and behavioral sciences	3	8.97
	3. Background in psychology	3	8.97
II.	Please describe the nature and extent of your "instructional" and/or "professional" relationship with your research advisor.		
	A. Most frequently given responses	Number of Respondents	Percent of Respondents
	1. Worked very closely with my advisor. Advisor was friendly, available, eager to help and accepted my suggestions with reference to the research project. We were research partners. We met frequently to discuss research related activities.	14	41.86

III. What changes do you think would be beneficial to future programs?

A. Most frequently given responses	Number of Respondents	Percent of Respondents
1. More contact with outside professionals in the field of educational research.	5	14.95
2. Better screening of professors who get research assistants	3	8.97
3. Program availability to more students	2	5.98
4. More interaction between trainees working on projects	2	5.98
5. Introductory work needed on research techniques	2	5.98

IV. Do you plan to pursue a career in educational research?

Please explain.

	Number of Respondents	Percent of Respondents
A. "Yes"	14	41.86
1. Most frequently given explanations for the "Yes" response		
a. Doing graduate work in education research	(4)	(11.96)
b. Presently teaching statistics and research	(3)	(8.97)
c. Plan to attend graduate school in educational research	(3)	(8.97)
d. Plan to do research as a counterpart to my teaching career	(3)	(8.97)
B. "No"	3	8.97
1. Most frequently given explanation(s) to the "No" response		
a. Plan to go into teaching	(3)	8.97
C. "Undecided"	4	11.95

TRAINING RATINGS OF TRAINING EXPERIENCES

Trainees were asked to consider a list of course work and other research project experiences and to use the code given below to rate its value with reference to the program.

Rating Scale

A. Extremely valuable as an educational research experience

B. Potential value for a future career

C. Of some value but not particularly applicable to the program

N/A Not applicable to the program

It should be noted that all respondents did not rate each research experience. Data on trainee ratings are given in Table XXII

TABLE XXII

RATING OF TRAINING PROGRAM EXPERIENCES BY RESPONDING TRAINEES

Training Program Experiences	Percent of Responding Trainees Giving Rating			
	A	B	C	N/A
Classes in statistics	44.85	41.86	8.97	2.99
Classes in research design and methodology	74.75	14.95	5.98	0.00
Classes in professional education	8.97	26.91	23.92	35.88
Trainee seminars	57.81	17.94	8.97	8.97
Trainee periodic reports	32.89	5.98	20.93	32.89
Researcher/Trainee Seminars	62.79	11.96	2.99	14.95
Field Trips	27.91	8.97	23.92	35.88
Trainee Research Project	59.80	23.92	2.99	5.98
Trainee Relationship to Advisor	80.73	5.98	2.99	2.99
Trainee Relationship to other Trainees	38.87	14.95	29.90	5.98
Classes in your particular area of Specialization	41.36	32.89	8.97	17.94
Practicum Experience (off campus)	59.80	14.95	5.98	38.87
Assigned Readings	29.90	35.88	17.94	14.95
Overall Subject Content of classes	35.88	41.86	8.97	5.98
Continuity of the subject	50.83	14.95	8.97	8.97
Future value of the overall research project for you	53.82	32.89	2.99	2.99
Advisor Participation in Project	65.78	8.97	0.00	11.96

The top six research experiences rated extremely valuable by the trainees were trainee relationship to advisor, classes in research design and methodology, advisor participation in project, researcher and trainee seminar, trainee research project and practicum experience off campus.

It should be noted that 38.87 percent of the trainees rated their practicum experience (off campus) as not applicable to the program. Field trips and trainee periodic reports were rated as not applicable to the program by one third of the responding trainees.

ORGANIZATION AND ORIENTATION ASPECTS OF THE PROGRAM

The responding trainees used the following rating scale for organizational and orientation aspects of the research training program:

1. Emphatically agree
2. Agree
3. No opinion
4. Disagree
5. Emphatically disagree

Here again it should be noted that all respondents did not rate each program aspect. The data for these aspects are summarized in Table XXIII.

TABLE XXIII

RATING OF ORGANIZATION AND ORIENTATION ASPECTS OF THE PROGRAM BY RESPONDING TRAINEES

Organization and Orientation Aspects of the Program	Percent of Responding Trainees Giving Rating				
	1	2	3	4	5
The objectives of this program were clear	17.94	57.81	0.00	23.92	0.00
The objectives were realistic	23.92	50.83	14.95	2.99	0.00
The program was well organized	5.98	62.79	14.95	27.91	2.99
The program was organized so that the trainees worked well together as a group	27.91	20.93	23.92	23.92	5.98
The interaction of the trainees was valuable	38.87	11.96	23.92	11.96	8.97
My time in this program has been well spent and worthwhile from the standpoint of a future career	57.81	29.90	2.99	2.99	0.00
More practicum experience should have been required	17.94	20.93	8.97	32.89	14.95
This program encouraged me to plan a future career in educational research	44.85	11.96	20.93	14.95	2.99
The program provided close interaction between students and advisors which was valuable	62.79	29.90	0.00	8.97	2.99
Trainees should have a larger part in planning future training activities	11.96	27.91	11.96	38.87	0.00

FINDINGS FROM FIELD INTERVIEWS AND OBSERVATIONS OF CURRENTLY OPERATING PROGRAMS

TRAINEES

The nature and extent of an undergraduate trainee's instructional and/or professional relationship with his program advisor, and of his involvement in research projects were the bases of his evaluation or judgment of his Undergraduate Research Training program. One would expect this to be the case, since a close interaction with a faculty member and heavy involvement in the conduct of research are the features of research programs which distinguish them from other college programs. Participants in Undergraduate Research Training programs prefer relationships where their advisors treated them as "professional assistants." In this role, the trainees' judgment and opinions were respected, considered and often used.

If the trainee's interaction with his advisor was a pleasant experience, if he understood the research project, and if he was satisfied with the role he played in the conduct of the project, he was apt to be satisfied with the program. If his reaction to any one of these aspects was negative, the trainee would either drop out or be disinclined to pursue graduate work in educational research. This comes about because most programs made no allowances for reassignment of trainees if the working relationship with his advisor was not mutually satisfying or if he was unhappy with a given research project.

An example of how a trainee's judgment concerning the program reflects his practicum experience, can be ascertained by looking at his opinions on trainee selection criteria. If a trainee participated in a research project where a strong quantitative background was required, then he would list this as a selection criteria. If he participated in a research project that did not require a strong mathematical/statistical background, such as studying readability, he would then stress as trainee selection criteria such items as interest in education and commitment to research.

Former undergraduate trainees who have continued in educational research as graduate students, or as professional educational researchers have a different perspective. Consequently their views regarding selection criteria are noticeably different. This difference arises mainly because of different objectives. The undergraduate trainee participates in an Undergraduate Research Training program to find out what research is, to obtain a headstart on graduate school, and/or to pursue his interest in research. That is, he views the program as one which acquaints him with research and research methodology, provides an opportunity to participate in a research project, and attempts to attract him to a career in educational research. Since the individual who is now a graduate student or an educational researcher feels that he knows what an educational researcher does, his objectives are geared to obtaining the training which prepares him to participate in educational research activity or to sharpening and refining the skills and tools used by professionals in the field. Hence, a former trainee's opinions are based on what an educational researcher does. The first criteria stressed are always a strong quantitative background and commitment to research; interest in education are third and fourth, respectively.

In programs where educational researchers ere brought in from outside the institution or where an institution's size or quality allowed it to have staff members actively engaged in educational research, trainees considered their interaction with these professionals to be one of the most valuable activities in the training program. This contact with professionals provides trainees with an opportunity to determine first hand what researchers really do. In addition, it gives the professional educational researcher an opportunity to interact with students at the undergraduate level - an experience he seldom can experience otherwise. At institutions where trainees had no interaction with professional educational researchers, the trainees listed this as an activity they would insist upon if they were designing a program.

It is also very important to trainees that their practicum experiences be primarily that of engaging in directed independent research or assisting in the conduct of research. Those trainees encountered who were performing typing and clerical chores either were planning to drop out of the program or had no plan to pursue graduate study in educational research.

Another salient point made by trainees was the importance of conducting an orientation session at the beginning of the program to describe and explain the complete scope of the program. It was learned that students dropped out of these programs primarily because they did not understand the goals and objectives of the given program or they did not understand the need for and the sequencing of certain required courses. Many trainees thought that it would be very helpful during this initial orientation session to bring in educational researchers to explain what they actually do in the field of educational research.

Upon completion of the Undergraduate Research Train[illegible] programs the trainees hoped to find positions in local and state school [illegible]s as evaluators and information specialists. The most frequently mentioned focus of probable trainee employment upon completion of the graduate program was Colleges and Universities. Employment opportunities with independent and commercial agencies were never mentioned. In addition there was a consensus of opinion that the academic programs were heavily oriented toward the preparation of trainees for eventual employment in conventional college or university research and research training positions as opposed to positions in local, state, and federal educational agencies and independent and commercial agencies. Trainees who either had completed or were presently engaged in practice teaching felt that this experience substantiated the above opinion with regard to local school systems. Many of these trainees saw no relationship between their programs and the problems they found in the classroom.

DIRECTORS

Six program directors and supportive colleagues were personally interviewed during this study. In all but one case, the individuals interviewed were directing currently operating undergraduate educational research programs. See Appendix I for list of directors interviewed.

Two of the most prominent and striking findings resulting from the personal interviews with program directors were their enthusiasm for Undergraduate Research Training programs and the high degree of importance they placed on these programs to education and educational research. Although the arguments used by the directors to justify and support the program were not significantly different from many of the points mentioned in the rationale for this study, the manner in which the directors presented their points of view clearly reflected their enthusiasm. This was also reflected by their eagerness to discuss their specific program.

The Directors echoed the opinions of the trainees on such matters as advisor-trainee interaction, trainee interaction with professional educational researchers, and practicum experience. However, none of them were aware of the trainees' unhappiness with the present orientation procedures or with the nonexistence of such procedures.

All but one of the Directors stressed the importance of selecting students with strong quantitative backgrounds. The other Director felt that if he recruited interested and committed students, they would acquire the requisite quantitative skills as a result of the program.

At only one institution did the director express his concern about the lack of oriental, spanish surnamed, or Black trainees in his program. He was also the only one to aggressively wage an effort to recruit minority group students.

There were a variety of opinions about trainee financial support. Directors who provided stipends to trainees felt that it was justifiable because students doing research were more or less maintaining a part-time job or at least a committment to participate actively and regularly in their research project. Financial support was also necessary, these directors felt, because students often were giving up jobs to participate in the program.

In programs that did not offer financial assistance, the directors were all in agreement that monetary aid was not necessary to entice trainees to participate. Indeed, such assistance was deemed detrimental to the overall welfare of the program. In one instance the undergraduate research program was simply too large to operate on an individual support basis. However, in all cases, these professors were hesitant to suggest that student payment was necessary. They intended to view the research work that the trainees did as an essential and important part of the curriculum. Students who wanted to be educational researchers should participate in the program activities with or without payment. There was a consensus of agreement among directors that these programs should be full-fledged undergraduate degree granting programs in educational research.

Two directors complained about the difficult time they had securing the services of staff members at their institutions who are engaged in research but are not members of the department with which the program was affiliated. These faculty members refused to participate on a formal or informal basis without pay. Unfortunately, this occurred at institutions which received little or no outside support.

Directors have found that allowing advanced trainees to enroll in graduate level educational research courses, was a very strong incentive for talented undergraduates to remain in the program and complete its requirements.

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

The main centers of active concentration of this study were the gathering of data relative to the various undergraduate R,D,D, & E training projects under design, development or operation and R,D,D & E manpower; the cataloging, analyzing and evaluation of the information gathered; the presentation of a compilation of definitions given by project directors for the occupational titles: researcher, developer, disseminator and evaluator; to prepare textual material describing the state-of-the art undergraduate R,D,D, & E training activities and needs; and to prepare a plan for design, development, pilot test and evaluation of an undergraduate R,D,D, & E training program. In this chapter the findings from the questionnaires will be discussed and recommendations in the form of two designs for an undergraduate R,D,D, & E training program will be presented.

DISCUSSION OF QUESTIONNAIRE RESULTS

Director's Questionnaire

The questionnaire was useful for obtaining descriptive data about the programs. The eighteen colleges and universities that responded had programs in the operational stage with the highest percentage in the category of "having completed such a program but no longer operating". The essential training activities for each of the responding institutions included core and special courses designed for the educational research students, practicum and field trips. The core courses most frequently listed were Educational Psychology, Curriculum Research, Educational Measurement, Research Methods and Design, Statistics and a Research Seminar. The practicum activity (research project) most frequently was initiated cooperatively between trainee and research professor with professor initiated research projects second in terms of frequency. Field trips to other research centers and school systems ranked about the same in terms of frequency.

Directors of the Undergraduate Research Training programs were asked to give the rationale or philosophical bases for their programs. These were grouped into the following categories: limited funds, research interest and career aspirations. Most program directors included information for their rationale or philosophical bases in the above mentioned categories. General objectives of the research training programs were in the areas of identification of students to supplement their Bachelor's degrees with programs in research so that they would be strongly predisposed to graduate in an area related to educational research and to provide programs to help develop skills, knowledge and understanding in order to prepare graduates to assume educational research responsibilities. Specific objectives were categorized as knowledge, application, and orientation. These, for all practical purposes, received equal emphasis by the program directors. Trainees were most frequently prepared to seek employment in local educational agencies, research assistants, information specialists and general educational researchers for school systems. Most trainees were prepared to go on to graduate school with their choice of discipline or to pursue graduate training in educational research or related fields. The directors of the programs, on an average, devoted 57% of their efforts to the research component, 21% of their efforts to the development component and 15% to each of the components listed as dissemination and evaluation.

Twelve of the responding institutions listed government funding as the financial base for sustaining their undergraduate R,D,D, & E programs. This represented 66 2/3% of the responding institutions. Three of the colleges and universities received university funding and two were or had operated with university and outside funding. The kind of trainee support was listed as stipend, tuition relief, and variable/incidental. An average amount of $265.00 per semester was given as a stipend by 44.44% of the responding institutions. Resources, facilities and enrichment activities which were a part of the trainees' program were field trips, office space, and computer usage. The average number of staff members who devoted some percent of their time to the undergraduate research training program was

eight while eight of the institutions indicated that the part time staff was equivalent to from one-to-five full time staff members. The largest number of the Undergraduate Research Training programs was concentrated in the Southeast and Midwest sections of the United States. One third of these programs was located in institutions with enrollments of less than 5,000 students. The departmental arrangements was listed as a single discipline by 55.55% of the responding institutions. Over half of the responding institutions had relevant graduate programs. The research programs were almost equally divided between public and private colleges and universities. Practically, every professional area or discipline was represented by the trainee participants. Some of the methods of trainee recruitment were sales letters, notices on bulletin boards, ads in school newspapers, personal contact, referrals and normal admission procedures. Most of the colleges and universities that esponded used the grade point average, personal interview and orientation to research as trainee selection criteria. The average number of trainees in the programs was from fifteen-to-nineteen. The greatest particular interest was placed on the following specific content areas: problem conceptualization (proposal writing), design, measurement and report writing.

The areas considered in the plans for evaluation of the research training programs were achievement of performance objectives, staff performance, training activities and instructional materials. Broad goals also were considered in the plans for evaluation. The training activities most frequently listed by responding directors as the most effective or productive were internship experience, indepe 'ent research projects, seminars and informal discussions. Only three of the program directors elected to give an operational definition; plus skills and competencies, for researcher, developer, disseminator and evaluator.

Trainee Questionnaire

Thirty five trainees returned their completed questionnaires and twenty six of these trainees were interviewed personally. Trainees indicated that they had heard most frequently about the research program from their educational psychology professor and via letter sent by the director of the undergraduate research training program. Trainees indicated that they were encouraged to participate in the program most frequently by the offer of a stipend, staff and director made educational research sound interesting and the opportunity to be involved in some type of educational research.

Trainees indicated that the kinds of backgrounds participants should have before enrolling in the program are good mathematics background, background in statistics and behavioral sciences, and a background in psychology. When asked to describe the nature and extent of their "instructional" and/or "professional" relationship with their research advisor, almost half of the trainees gave the following response:

> I worked very closely with my advisor. My advisor was friendly; available, eager to help and he accepted my suggestions with reference to the research project. We were research partners.

The trainee participants listed more contact with outside professionals in the field of educational research and better screening of professors who got research assistants as beneficial changes to future programs. Trainees rated classes in research design and methodology seminars, trainee research projects, trainee relationship to advisors, practicum experiences and advisor participation in projects as extremely valuable educational research experiences.

CONCLUSIONS

Results of this study indicate that there is a dire need for government support and funding of Undergraduate Research Training programs since most programs were terminated when federal funds were depleted.

Program directors currently operating Undergraduate Research Training programs are enthusiastic; have good ideas and plans for present and future programs; and would like to see more federal funds spent on such programs. Six currently operating programs (the only ones known to the Consortium) can't possibly supply all of the educational researchers (paraprofessional and preprofessional) that will be needed in the next ten years.

RECOMMENDATIONS

The Consortium members strongly recommend that more funds be made available to support current and new undergraduate RDD&E training programs and to support the pilot test of the two Undergraduate Educational Research Training program designs that follow.

OPTIMUM DESIGN FOR AN UNDERGRADUATE EDUCATIONAL RESEARCH TRAINING PROGRAM

INTRODUCTION

The design of an optimum undergraduate educational research training program presupposes that the authors know all of the variables which must be included in such a design. Moreover, it presupposes that the authors know how each of these variables must be optimized in order for the total program to be an optimum one. The authors will admit at the outset that this is not true.

During the past year the Drexel University Consortium has had the opportunity to study some past and current undergraduate research training programs in colleges and universities across the country. They have been able to analyze various programs funded by USOE and have made on the spot visits to several program locations. The optimum design that follows will be based on the findings as a result of an analysis of the above mentioned programs.

The Undergraduate Research Training program developed by the Drexel Consortium will have a built-in assessment technique which will identify weaknesses in the program and make recommendations for improving the weak aspects of the program.

The assessment technique will also involve periodic reviews of major goals and specific objectives around which the total program is designed. Essentially the design presented herein is one which is programmed to learn from itself, and to the extent it learns from itself it will be a self-optimizing program.

A GENERALIZED UNDERGRADUATE RESEARCH TRAINING PROGRAM DESIGN

The paradigm shown in the flow chart below depicts the essential elements which must be included in the optimization of an undergraduate research training program. This generalized design contains five major parts. These

parts are as follows:

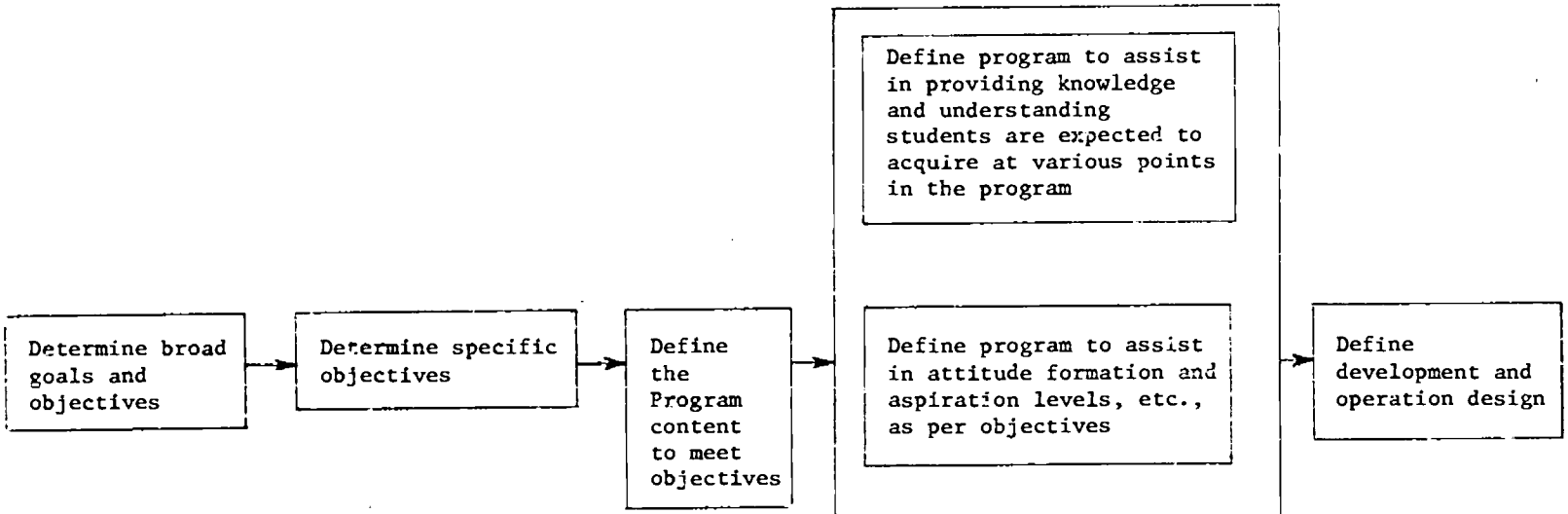
1. Program objectives - major and specific
2. Program Content to meet objectives
3. Development and Operation Design
4. Operation of the Program
5. Assessment of the program to determine if the program is meeting its objectives, and to make recommendations for program modifications

The parts are logically interlocked and the last part feeds into all other parts and recommends changes in each that are designed to optimize it.

CHART I

OPTIMUM DESIGN FOR AN UNDERGRADUATE

EDUCATIONAL RESEARCH TRAINING PROGRAM



1. Program Objectives

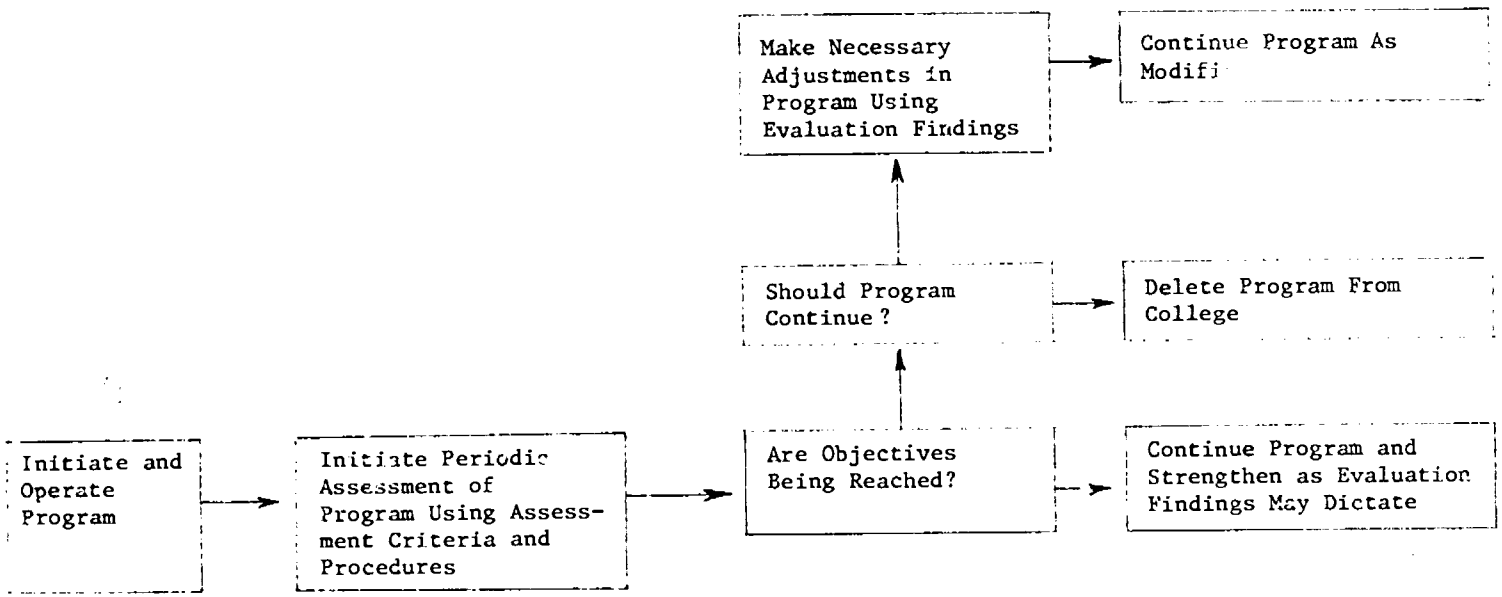
2. Content Design

CHART I (Continued)

- Determine optimum number of students for program by years
- Determine entry point for students
- Determine intensity of training for program e.g., B.S. minor, other
- Determine the set of criteria for selection of students
- Determine method of recruiting students
- Determine number and selection criteria for faculty participants
- Determine career ladder for student for counseling and planning purposes
- Determine an orientation format for the students to the field of RDD&E
- Determine the format for individual projects if dictated by objectives, and determine the relationship to courses and practica
- Determine need and availability of facilities, materials and supplies
- Determine budget and sources of support including student stipends, if desired by years
- Determine follow-up procedures for graduates
- Determine criteria for assessing program effectiveness as per objectives in all areas
- Determine administrative relationship of program to other disciplines, and top administration

3. Development and Operation Design

CHART I (Continued)



4. Operation of Program

5. Assessment of Program

OBJECTIVES OF AN UNDERGRADUATE RESEARCH TRAINING PROGRAM

The objectives of an Undergraduate Research Training program should follow from the designer's best estimate of what is expected of the students upon termination of training at any given level. The findings from former and current undergraduate research training programs reveal that the most frequent expectations of students were that they would enter graduate school or would pursue work in educational research in lieu of teaching. Other terminal objectives relate to the improvement of the teaching-learning process by the addition of the research dimension in the preparation of teachers, a greater interest in research related areas such as educational development and dissemination, and an expectation that some students would pursue these areas in further study or would work in these areas while teaching or in lieu of teaching. These terminal objectives require a set of more specific objectives which must be met prior to the terminal ones. A summary of the major terminal and specific intermediary objectives of an UER&D program are shown below in Table XXIV.

TABLE XXIV

SUMMARY OF TERMINAL AND INTERMEDIARY OBJECTIVES

Major or Terminal Objectives	Specific Objectives
1. To prepare students to pursue graduate work in educational research.	1. To know and understand fundamentals of the psychological, social, and historical foundations of education.
2. To prepare students to assume work responsibilities in educational research at the post Bachelor's level.	2. To know and understand the fundamentals of general psychology (especially areas pertaining to human development, learning, personality, perception, motivation, physiological aspects of behavior, social behavior and behavior pathology).
3. To optimize the teaching - learning process through increased emphasis on research, development, dissemination and evaluation.	3. To know, understand, appreciate and be able to use the scientific method.
4. To optimize the teacher - training program in colleges and universities by the addition of research training techniques.	4. To know and understand the meaning and value of study in educational research development, dissemination and evaluation.
5. Other terminal objectives may relate to an expressed national, state or local need.	5. To know and understand principles and techniques of descriptive statistics and be able to use same.
6. To increase the awareness of the effect of the social, economic, and educational and other societal variables upon education and to increase the ability of the student to work as a positive charge agent.	6. To know and understand the fundamentals of the design of educational experiments and to know the principles and techniques of descriptive and inferential statistics in educational research.
	7. To know and understand the problems and domain of educational psychology.
	8. To know and be able to use psychological tests used in assessing abilities, and achievements of the learner (use of individualized tests is not included in this objective).

TABLE XXIV(Continued)

9. To know and understand some of the educational development projects currently across the country.

10. To obtain some practical experience in research settings, e.g. in local school agencies.

11. To obtain some practical experience in educational developmental projects, e.g. developing and testing programmed instructional units, closed circut TV instructional programs, etc.

12. To be able to perform elementary dissemination e.g. coding research, using ERIC indexes, abstracting, etc.

13. To be able to design experiments in education.

14. To design an individual educational research project prior to graduation.

15. To know and understand elementary computer concepts and be able to make elementary applications of same.

16. To assist in the development of a scientific attitude by the student.

17. To assist the student in developing social skills needed in order to work effectively with teachers and administrators.

18. To know and understand the social, economic, etc. factors which condition the educational process.

19. To be able to provide leadership in making changes in the educational process designed to optimize it.

DESCRIPTION OF THE CONTENTS OF AN OPTIMUM UNDERGRADUATE RESEARCH PROGRAM

The contents of an optimum RDD&E program must make provisions for objectives to be reached in three major areas. These areas which are dictated by the objectives are:

1. Cognitive - that portion of the content designed to help students know and understand all areas covered by objectives.
2. Affective - that portion of the program designed specifically to increase student interest in educational research to raise his training aspiration level to continue to graduate school.
3. Practica - that portion of the program designed to enable the student to use his knowledge in a realistic setting, to obtain practical experience, to enhance his understanding of the theoretical aspects of research.

All of these components are related and the design of the instructional program must integrate them as much as possible.

Objectives of the Program

Objectives →

	A. Core & Elective Curricula	B. Field Visits and Invited Researchers	C. Practical Experiences
1.	Orientation to RDD&E and the Scientific Method.	1. Visitors from leading RDD&E programs.	1. Internship experiences in local educational agencies
2.	All students who have not taken introductory psychology and education must do so.	2. Visitors from agencies which employ RDD&E students.	2. Internship experiences in State Departments of Education
3.	Descriptive statistics in Psychology and Education.	3. Visits to Regional Labs.	3. Internship Experience in U.S. Office of Education
4.	Inferential statistics and Design of Experiments in Education.	4. Visits to local agencies.	4. Internship in colleges and universities (home, away).

A. Cont'd	B. Cont'd	C. Cont'd
5. Educational Psychology and Methods of Behavior Assessment.	5. Participation in or visits to research and research related conventions, etc.	5. Internship at Regional and other Educational Labs.
6. Seminar in Educational Research, Current Problems and Issues, and Practices and Trends in Educational Development.	6. Visits to and from State Departments of Education	6. Internship at Educational Development Companies
7. Dissemination in Educational Research and Development.	7. Visits to and from U. S. Office of Education personnel in various functional areas.	7. Internship at local city and county agencies.
8. Computer Concepts and Its Application in Educational Research.		

RDD&E DEVELOPMENT AND OPERATION DESIGN

An optimum design for an RDD&E program must outline the methods to be used in developing and operating it. There are several sets of variables included in this category. These are outlined in the generalized program design. In the paragraphs below, procedures and guidelines that should be considered in the operation of an RDD&E program are outlined. These guidelines and procedures represent a synthesis of the guidelines and proceudres used by the programs studied by this Consortium.

Number of Students

The number of students which should be recruited into the RDD&E program will vary with several variables; e.g. size of the college or university, number of faculty and their availability to assist in the program (teaching, advising, conducting research, development, etc.), major educational emphasis of the college or university; local, state, regional and national needs for research and development purposes, available training facilities and funds.

The program administration must therefore work to determine the optimum number of students to train during any given period of time at his own college or university. This should be a continuous administrative function if this determination is to be an optimum one.

An optimum design must therefore have a built-in administrative process for studying the types of variables indicated above in order to arrive at the optimum number of students to consider in a program. The colleges and universities studied by the Consortium recruited varying numbers of students primarily as a function of the number of stipends for students, available faculty to participate in the program and amount of available resources.

Point-Of-Entry Into an RDD&E Program

Results of the Consortium's stud, of past and existing research programs indicate that most institutions allow students to enter the program in their sophomore year. In order for a student to optimize his own academic program planning, he should know as early as possible if he will be accepted into the program. In the colleges and universities studied, admission into the programs was a function of the student quality point average; hence, it was not possible to determine if he or she was acceptable until after the end of the first year of work. It is recommended that the sophomore year bethe point-of-entry for an RDD&E major or minor degree program.

Organization of Courses

The results from studies made of past and current research programs reveal that a set of common courses was present in most programs. Almost all programs provided for core courses in tests and measurements, statistics, research design, independent research and weekly or other periodic seminars. Class meetings for these courses varied at the various schools. The core courses required from 1 to 3 class meetings per week depending upon the length of each class and amount of material covered. Generally these courses were equivalent in class time to a 3 semester hour course, i.e. three classroom hours per week for approximately 4 1/2 months.

The variable related to integration of separate courses was handled differently by different schools. Some schools organized the total topical offerings into fewer courses than others. It is recommended that the relationships between the various segments of knowledges and skills needed by students be clearly explained at the beginning of the program. The courses mentioned under the Content Design should satisfy these inter-relationships between the various courses.

The program administration must assess the organization of courses continously and make modifications whenever the assessment indicates that modifications are needed. For an optimum design it is recommended that the following courses be offered separately and that the amount of emphasis be

in proportion to the objectives of the program. The Consortium members are suggesting these courses in terms of semester hours for example purposes only.

1. Orientation to Educational Research Development and Dissemination and Orientation to The Scientific Method - THREE SEMESTER HOURS. This course could be given in a more intense manner than that represented by a semester.

2. Introduction to Statistics. This course should be designed to provide the fundamentals of descriptive statistics. A clear understanding of these fundamentals are requisite to success in the next level of statistics which involves principles and techniques of making inferences - three semester hours.

3. Design of Educational Experiments and Inferential Statistics. This course is considerably more comprehensive than the previous ones and requires the use of knowledge, understandings, and skills gained in the previous one. This course must be clearly understood if the student is to perform individual research projects and if he is to get the most from his internship experiences. Moreover, successful completion of this course should be a good indicator of the potential of the student to pursue graduate work in educational research and related fields.

   This course should cover at least two quarters, semester, or trimesters and the first of either of these should be successfully completed before the students begin (formal or detailed individual research projects.)

4. Seminar in Issues and Problems in Educational Research, and Current Practices and Trends in Educational Development should not be initiated until after the orientation course and not until the student completes the first portion of the design course. The Seminar may run concurrently with the internship and the last half of the design course.

   The Seminar should continue throughout the senior year. The maximum length of Seminar should not exceed the equivalent of three semesters. In addition to topics covered by those indicated by the title of the Seminar above, the Seminar provides a means whereby the student may discuss his current work experiences, successes, problems, etc. with his fellow students. The Seminar should enable the student to participate fully in selection of areas of discussion, lead discussions and make reports. It must be designed in such a fashion so as to stimulate interest.

5. The Practica or Internship Experience should be designed in such a fashion so that their relationship to theoretical discussions is directly relevant. The duraction of the internship experience will vary as a function of several variables. For instance, in many colleges students in the research program may need to earn money while learning, and if an appropriate internship experience is worked out which provides for pay, the program may wish to spread the experience over 1 1/2 or 2 years.

   Other programs may wish to provide this experience during the summer. The availability of resources, personnel and agencies which participate will dictate the specific arrangements for the internship experience.

   In any case the internship should be one in which the student is actively involved with his advisor. His advisor must take time to guide and assist the student, develop meaningful tasks in research and development for the student and maintain close communication with project administration.

6. Individual projects, a course in educational psychology, dissemination in education, computer concepts, and applications should be an integral part of the program. Program administration using the assessment techniques described later must review the program offerings to assure that objectives are being reached. If they are not being reached the Program Administration must perform the content modification function as needed.

7. The arrangements for visits to local research agencies, local, regional and national laboratories should be designed to supplement the work in specific courses. Additionally visits to conventions, invitations to RDD&E persons from other- colleges and universities, and laboratories should be encouraged not only for the cognitive benefits expected, but also for the effective benefits outlined as part of the objectives of the program.

8. In the Program Content design the need for the student to have access and be able to use the various equipment, manuals, etc., in the field of RDD&E was indicated. Some of these practical areas are included in the courses outlined earlier. It is important that the student have access to calculators, individual work desks, statistical manuals, ERIC materials, and a computer. These should be available both during class and at other times.

Method of Recruitment and Selection

Candidates selected for the RDD&E Program should be students who are most likely to successfully pursue a graduate program in educational research. For this reason, the following selection criteria are established:

1. Students are recruited from a variety of disciplines (Liberal Arts, Fine Arts, the Natural and Physical Sciences).

2. Students should have maintained an over-all GPA of 3.00 or better on a 4.00 scale. Most of the programs studied used a higher grade point average in their selection process. Nearly all of the programs stressed the selection of students with a grade point average of 3.5 and above. The relationship between this variable and program effectiveness was not substantiated. It is recommended that the academic performance level of 3.00 or the equivalent of 'B' performance be used in the selection process. It is generally known that the academic performance of students increases with years in college. One could easily neglect a significant amount of talents by by-passing 'B' students who have just completed the freshmen year.

3. Candidates should have completed basic courses in Psychology, Mathematics and the Social Sciences.

4. Recommendation from the major advisor.

5. Applicants should be classified as sophomores, juniors, or seniors.

6. A favorable impression in one screening interview.

7. Proficiency in English as determined by college marks or other criteria.

Final selection from among the qualified applicants should be based, upon such variables as interest in education, desire to do graduate work, etc.

Criteria for Faculty Participation

Faculty members for the program should be competent in the area of educational research with a Ph.D. or masters degree in his area of concentration, and should be actively involved in some educational research project. It is necessary that these individuals have had experience in designing and conducting a research project, or in administration, community educational development, manpower training and/or development.

In choosing the faculty for the RDD&E program, a multi-disciplinary approach should be used to involve a variety of human resources in the various aspects of the program.

Criteria for Internship Agencies

An important part of the RDD&E Program is direct experience in some phase of Educational Research. This experience should be provided through resources that are available in the college or university and in the surrounding area. The agencies or research centers chosen for the internship must meet the following criteria:

1. Area resources chosen must be relevant to the objectives of the Program.
2. Directors of agencies or research centers must be interested in the educational research effort.
3. The offices and agencies, participating in research, development, dissemination and evaluation should be willing to hire students upon graduation.
4. The agencies and centers must be able to provide a full range of practical experiences for the students and the intensity and quality of these experiences must meet the objectives of the internship experience.
5. Sites for internship must be within a reasonable distance to prevent transportation problems for trainees.

The internship sites may be of a wide variety e.g. schools regional or National laboratories, research centers, corporations engaging in educational development, college or university research and development, etc.

Individual Project Format

The trainee's individual project must be under the direction of the Program Director and/or a full-time faculty member. Each trainee should be encouraged to engage in a project which is unique to his or her interests, ability and level of development.

The individual project may involve:

1. Investigation of any educational problem.
2. Development of research design.
3. Execution of the study.
4. Treatment, processing and interpretation of data.
5. Writing of the research report.

The above criteria must be a requirement for a Bachelor of Science Degree in Educational Research. For the minor in Educational Research, the individual project may encompass only a part of the research act.

Academic Calendar for the RDD&E Program

The particular calendar which should prevail for the program depends on the type of college-wide calendar, e.g., semester, quarter, and the need to offer parts of the program during the summer for student convenience or because this is the best time for the faculty involved. When the college is small and has few resources and faculty members to participate, it may be better to plan for greater emphases during the summer. The recommendation is that program administration make continuous study of the best time at the particular college or university in question to increase or decrease emphasis in the program.

Seminar Format and Other Means of Communications

The essential features of the seminar have been previously described and it has been shown how it can be used as a communications technique. Many of the RDD&E programs studied used seminars partly for exchange of ideas and information with other participants.

It is recommended that the program publish a flyer for circulation on a monthly or other periodic basis for use by the total RDD&E program including students, faculty, internship agencies, college and university administration and other departments of participating students. This flyer should provide news items of interest to all groups in the program. The following types recommended for inclusion in the flyer are

1. New students and faculty members entering the program
2. News pertaining to achievements of faculty and students in the program
3. Additions to or deletions from the program
4. New internship sites
5. Student placements
6. Names of students who go on to graduate school and their progress

7. Listing of individual projects and progress of same during the year.

8. Other

Determine Career-Ladder RDD&E Students

When the undergraduate research training program is designed to prepare the students to enter graduate school the career ladder from the undergraduate program is a one step affair. When the training program focuses upon paraprofessionals through Ph.D. professionals a more detailed career ladder is in order.

In order to show the progression of programs needed from the pre-professional level through the Ph.D. level the generalized design need only to show the objectives, content, operation, and evaluation for each level.

THE DESIGN AND IMPLEMENTATION OF AN EVALUATION DESIGN FOR THE UNDERGRADUATE EDUCATIONAL RESEARCH AND DEVELOPMENT TRAINING PROGRAM

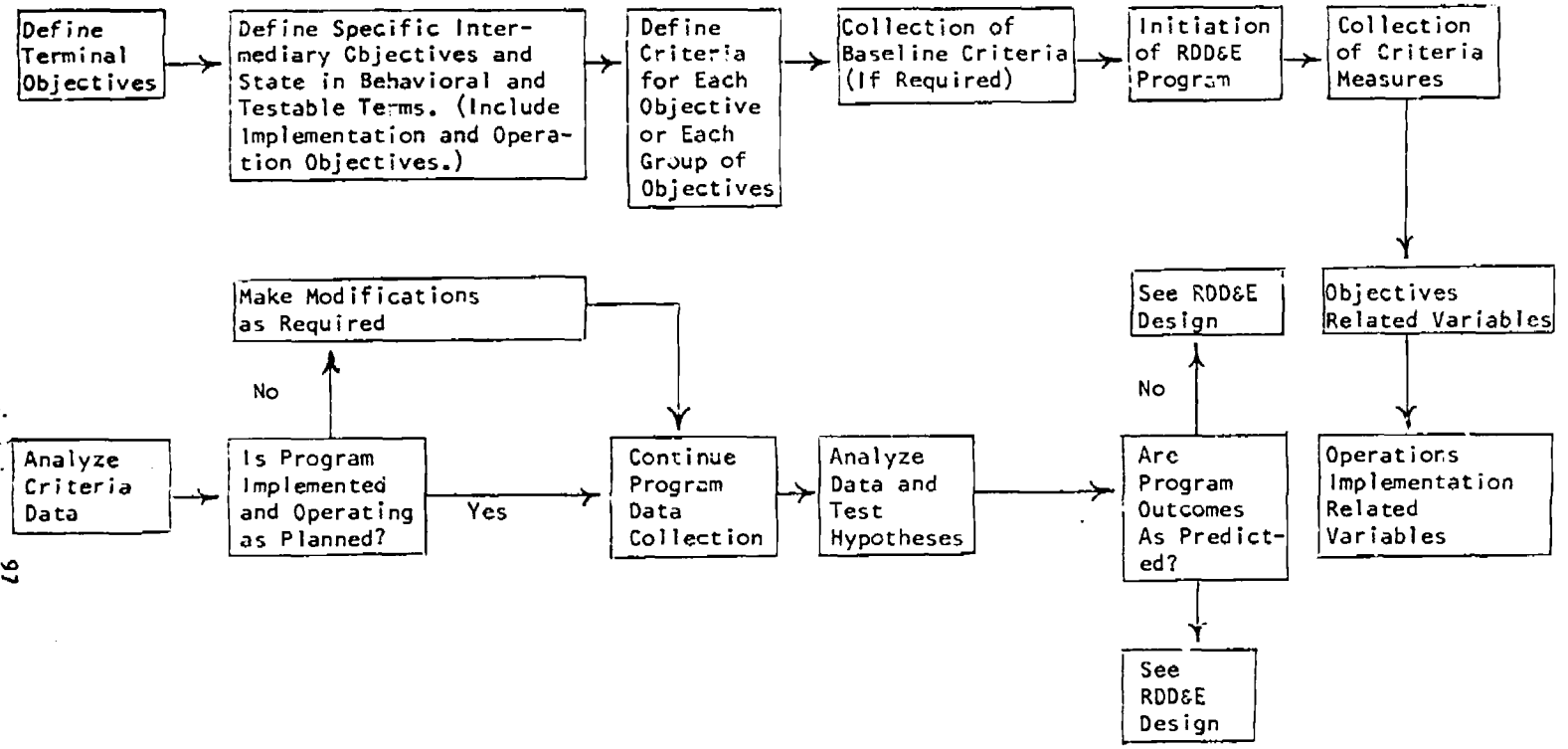
An essential characteristic of the undergraduate educational research and development training program is the emphasis placed upon the systematic evaluation of the program itself. The training program should be viewed as an independent variable in research terminology, and as such, it is expected to have certain effects upon those involved. These expected effects are those outlined in the objectives of the program. If the actual results of the program are found to be the same as those predicted, then it may be concluded that the program meets its objectives.

Care, however, must be taken to assure that the observed results are not due to the operation of other variables which have not been controlled during the implementation of the training program. The evaluation design must, therefore enable program administration to either control other pertinent variables likely to produce the expected results of the program, or it must enable the program administrator to measure and subtract the effects of other pertinent variables.

The evaluation process must also enable the program administrator to make decisions based upon objective findings as the program proceeds. These decisions should serve to make adjustments in the program without undue delay in order to optimize the program. A generalized schema for the evaluation of an undergraduate educational research and development program is shown below in Chart J.

CHART J

EVALUATION DESIGN FOR AN UNDERGRADUATE RDD&E TRAINING PROGRAM



In using this design one must refer first to the objectives of the program. Terminal objectives must be stated as clearly and succintly as possible. In the present case reference must be made to the terminal objectives stated earlier in this document.

Secondly, one must identify a set of specific intermediary objectives which must be reached to a sufficient level before it will be possible for the terminal objectives to be reached. These intermediary objectives must be stated in measurable terms.

After all objectives are stated, it is necessary to determine what measure will be used to determine the extent to which the various objectives are being reached. Examples of criteria in the optimum RDD&E program discussed in this document are as follows:

Terminal

1. Number and percent of students in the program who go on to graduate school.
2. Number and percent of students who begin work in educational research and development upon graduation.
3. Number and percent of students who complete graduate school in the field.
4. Number and percent of students who enter graduate schools but who do not complete it.
5. Number and percent of students who complete graduate school in the field and who also enter work in the field.
6. Number and percent of students who complete graduate school and enter employment in another field.
7. Ratings by faculty and employers of graduating teachers on the increased effectiveness of the teacher training program after implementation of the program.
8. Attitude scores of students toward economically and educationally deprived children and innovations designed to increase the effectiveness of education for these children.
9. Other

It is necessary to use an appropriate control group of students (if available) in order to assess the effectiveness of the program in producing professionals in educational research as compared to other disciplines which have been responsible for producing educational RDD&E personnel in the past.

Specific Interim Criteria

The interim objectives described earlier lead logically to a set of criteria which can be used to ascertain the extent to which these intermediary objectives are reached. The objectives yield the following types of criteria:

1. Knowledge and understanding of the field of educational research (scores from test).
2. Test scores which indicate knowledge and understanding level of the scientific method.
3. Attitude toward research scores.
4. Scores from tests indicating the skill level of student in designing experiments, selecting appropriate statistical models, performing computations, etc.
5. Ratings from internship supervisor and program personnel on the students interest, application level, etc. in the internship.
6. Ratings on the student's ability to abstract research literature, code research report, etc.
7. Ratings on the ability of the student to get along with other persons in program, directors, internship supervisor, teachers, etc.
8. Other

These criteria form the basis of the data collection function and should be determined at the beginning of the program.

A MINOR DEGREE PROGRAM IN EDUCATIONAL RESEARCH AND DEVELOPMENT

FOR SMALL AND/OR PREDOMINANTLY BLACK COLLEGES

MAJOR OBJECTIVES OF THE PROGRAM

1. To strengthen the colleges' current education program by placing emphasis on educational research and development, and offering it as a minor degree program.

2. To improve the teaching-learning process by providing prospective teachers with knowledge and skills of educational research and development.

3. To provide sufficient instruction in R & D to enable a graduate to begin work as a research assistant or development assistant if he or she prefers not to teach.

4. To serve as a model for undergraduate programs in educational research and development.

SPECIFIC STUDENT OBJECTIVES OF THE UNDERGRADUATE RESEARCH PROGRAM ARE AS FOLLOWS:

1. To know and understand the scientific method.

2. To know and be able to use elementary statistics in psychological and educational research.

3. To know the fundamentals of general psychology.

4. To know the fundamentals of education (its sociological, psychological, and historical aspects).

5. To know and understand the problems and domain of educational psychology.

6. To know and be able to use psychological tests used in assessing abilities and achievements of the learner (use of individualized tests is not included in this objective).

7. To know and understand some of the educational development projects currently in practice across the country.

8. To obtain some practical experience in a research setting.

9. To obtain practical experiences in educational development projects, e.g. developing and testing instructional programs, etc.

10. To be able to perform elementary dissemination tasks, e.g. coding research, using ERIC indexes, abstracting, etc.

11. To be able to design experiments in educational research.

12. To know and understand elementary computer concepts and be able to make elementary applications of same.

13. To assist the student in developing those social skills needed to work effectively with teachers and administrators.

BASIC PROGRAM DESIGN

Major Areas of Study	Core Courses	Special Courses
Education	Orientation to Educational Research	Internship
Psychology	Tests and Measurements	Practicum or Project
Mathematics	Educational Statistics	
Science	Research Methodology I	Seminar I
Social Science	Research Methodology II	Seminar II
	(Optional)	
	Computer Science I	Education Technology

BASIC PROGRAM CONTENT

CORE COURSES

ORIENTATION TO EDUCATIONAL RESEARCH - This course should present an overview of educational research; what it is, how it operates, and why it is necessary are important components to be included. Particular reference should be made to the career ladder and vocational opportunities of educational research. As a course open to all students, it would serve as both a recruitment and screening activity for the program in educational research and, at the same time, promote the understanding of the role and scope of research in education.

EDUCATIONAL PSYCHOLOGY, TESTS AND MEASUREMENTS (EDUCATIONAL STATISTICS) - Standard courses now offered by most colleges. In all cases, these courses should relate to the processes of educational inquiry and application.

EDUCATIONAL RESEARCH METHODOLOGY I - Content to include; a) Scientific methods b) Dissemination principles and techniques and, c) The methods and concepts of evaluation in research.

SPECIAL COURSES

INTERNSHIP (project or practicum) - This activity should be designed so as to give practical on the job experience and training to the student in some ongoing area of educational research. Constant interaction between staff and student should be emphasized to insure that the activity contributes to the objectives of the program.

SEMINAR I - This seminar should include, in a practical manner, such activities as report writing, abstracting, coding, and classifying systems. A survey of current major problems in educational RDD&E should be included as content material.

SEMINAR II - This seminar should include the theoretical and practical aspects of educational development. Opportunity should be provided for students to examine and construct applications of findings from different and specific educational research. This seminar shuld be project oriented with all projects being as different as the setting will allow.

BASIC PROGRAM PARAMETERS

Recruitment

1. Sophomore Level

2. 2.5 grade point or better on a 4.00 scale

3. Personal interview

4. Demonstrated Interests (Orientation Courses, Instructor referrals, etc.).

ORGANIZATION Option I
- Core Courses - Years 2 and 3
- Special Courses - Years 3 and 4
- Projects and Practica - Summer 3 or Years 3 and 4

Option II
- Core Courses - Years 3 and 4
- Special Courses - Summers 3 and 4

FINANCIAL AID

Option I Tuition wavier - Years 3 and 4
Stipend - Summers 3 and 4

Option II Stipend - Years 3 and 4
Stipend - Summers 3 and 4

Possible sources of dunding are the Federal Government, Foundations, and Local Organizations.

ENROLLMENT 0.5% of total student body (maximum)
(This would vary depending on staff and facilities.)

PLACEMENT Community Service Organizations
Federal Programs
School Systems
Educational Research Organizations
Educational Training Institutions
Regional Laboratories

PRACTICA
PLACEMENT In addition to the above, on campus in research areas.

EVALUATION

1. Achievement of performance objectives by trainees-
   Grades
   Teacher ratings
   Student evaluation - kept current as a log
   Career plans

2. Staff performance, training activities and instructional materials
   Student Evaluation
   Personal Observation

3. Evaluation of program organization and structure

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Maltby, Gregory P. (See Langemeyer, Daniel)

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Thomsen, Donald (See Fortune J.)

Van Mondfrans, Adrian P. (See Asher and Denny, T.)

Wolf, W.C. (See Fleury, B.J.)

APPENDIX A

List of Institutions Surveyed

1. University of Alabama
2. American University
3. Antioch College
4. Arizona State
5. The University of Arizona
6. Auburn University
7. Bank Street College of Education
8. Beaver College
9. Bishop College
10. Boston College
11. Brandeis University
12. Brigham Young University
13. Bucknell University
14. University of California - Berkeley
15. University of Southern California
16. North Carolina State University
17. Case Western Reserve University
18. Clarion State College
19. University of Northern Colorado
20. University of Connecticut
21. University of Chicago
22. Colorado State University
23. Teachers College - Columbia University
24. Cornell University
25. Dakota Wesleyan University
26. University of Denver
27. Duke University
28. Emory University
29. Fisk University - Nashville
30. University of Florida
31. Florida State University

32. Fordham University
33. Franklin and Marshall College
34. Georgia Southern College
35. University of Georgia - Athens
36. Harvard Graduate School of Education
37. University of Hawaii
38. University of Houston
39. Iowa State University
40. University of Iowa
41. University of Illinois
42. Southern Illinois
43. Indiana University
44. Indiana State University (Terre Haute)
45. Jamestown College
46. Johns Hopkins University
47. Eastern Kentucky University
48. Western Kentucky University
49. University of Kentucky
50. Lehigh University
51. Livingston University
52. Loretto Heights College
53. Northeastern Louisana State College
54. Loyola University
55. Macalester College
56. University of Maryland
57. University of Massachusetts
58. Memphis State University
59. Eastern Michigan University
60. Western Michigan University
61. Northwestern Michigan College
62. Michigan State University
63. The University of Michigan
64. University of Minnesota

65. University of Mississippi
66. Mississippi State University
67. University of Montana
68. University of New Hampshire
69. University of New Mexico
70. New Mexico State University
71. The City University of New York
72. New York Institute of Technology
73. New York University
74. State University of New York - Buffalo
75. Norfolk State College
76. North Carolina Central University
77. University of North Carolina
78. University of North Dakota
79. Northeastern University
80. College of Notre Dame
81. North Virginia University
82. Oak Ridge Association University
83. Ohio State University
34. Ohio University - Athens
85. Oklahoma State University
86. Oregon College of Education
87. Oregon State University
88. University of Oregon
89. University of Pacific
90. Peabody College
91. Pennsylvania State University
92. University of Pennsylvania
93. University of Pittsburgh
94. Purdue University
95. Rhode Island College
96. Shaw University
97. Stanford University
98. Syracuse University

99. The University of Texas at Austin
100. North Texas State University
101. The University of Tennessee
102. Towson State College
103. Tufts University
104. U. S. Naval Academy
105. University of Virginia
106. Washington and Lee University
107. Washington State University
108. Washington University - St. Louis
109. University of Washington
110. Wisconsin State University - Madison
111. State University of Wisconsin - Oshkosh
112. Xavier University of Louisana

APPENDIX B

INSTITUTIONS COMPRISING THE SAMPLE

Institutions currently operating an Undergraduate Research Training Program

1. Bucknell University
2. Drexel University
3. Ohio State University
4. Purdue University
5. Tuskegee
6. University of Virginia

Institutions that previously had an Undergraduate Research Training Program

1. Arizona State University
2. Dakota Wesleyan University
3. University of Florida
4. Grinnell College
5. Northern Illinois University
6. Iowa State University
7. Eastern Kentucky University
8. Macalester College
9. Memphis State University
10. University of Oregon
11. Towson State College
12. Washington and Lee University

APPENDIX C

Department of Mathematics

drexel university · philadelphia 19104 · 215-387-2400

Dear Sir:

Drexel University is conducting a study to obtain information about undergraduate training programs in educational research, development, dissemination (diffusion), and evaluation.

We seek your assistance in providing information about your research training program.

May we mail you a questionnaire in early _____?

A self-addressed postal card is enclosed for your convenience in replying.

Thank you for your cooperation.

Sincerely yours,

Dr. Ewaugh F. Fields
Project Director

LFF/jm

Enclosure

APPENDIX D

PRESURVEY FORM

Do you have an undergraduate educational research training program?

_____Yes

_____No

If yes, may we send you a questionnaire?

_____Yes

_____No

Name of respondent

_____

Name of College or University

_____

APPENDIX E

Department of Mathematics

drexel university · philadelphia 19104 · 215-387-2400

Chairman

Department of Education

Dear Sir:

Drexel University is conducting a study of undergraduate training programs in educational research, development, dissemination (diffusion), and evaluation -- hereafter referred to as RDD&E. This information will be used in decision-making regarding future training programs and will be available to other institutions interested in such programs.

It is our understanding that you are involved in undergraduate educational research training. We, therefore, hope you can be of help to us in supplying pertinent information about your program on the attached questionnaire. In addition, would you please destribute the enclosed copies of the trainee questionnaire to five of your students who have completed or are in the final stages of your program. Please return all of the completed questionnaires to me by _____ _____ if possible.

If you are not in charge of the undergraduate research training program, please direct the questionnaire to the appropriate individual.

Any assistance you can provide will be greatly appreciated. If you would like a copy of the report of this study, we will be happy to forward one to you.

Sincerely yours,

Ewaugh F. Fields
Project Director

APPENDIX F

Director's Questionnaire

The Undergraduate RDD&E Training Program

A. Current status of the undergraduate RDD&E training program (check)

_____ 1. Under design, "idea stage," just beginning to look into it, "drawing board" stage;

_____ 2. Development stage, possess definite financial/staff/space commitment, "planning" stage;

_____ 3. Operation stage, activation stage, work is underway:

_____ a. initial period

_____ b. middle of the planned scheduled program

_____ c. nearing completion, end program

_____ d. established on-going program

_____ e. have completed such a program but no longer operating

B. Indicate below the relative percent of your total RDD&E program efforts devoted to each possible component, regardless of its stage.

Research _____%

Development _____%

Demonstration _____%

Evaluation _____%

C. Check the following training activities which are essential in your undergraduate RDD&E training program and give descriptions where called for.

1. Standard Courses Title _____

_____

Content _____

_____

Title _____

_____

Content _____

_____

2. Special courses created for RDD&E programs

Title _____

_____

Content _____

_____

Title _____

Content _____

_____

3. Practicum RDD&E activity

   A. Professor initiated

   B. Cooperatively initiated

   C. Student initiated

   D. Director assigned

4. Field trips

   A. Other Research Centers

   B. Conventions

   C. School Systems

5. Visiting Specialist

D. Questions pertaining to the program. If you have prepared printed materials which answer any of these questions, please submit in lieu of a written response. The respondent should complete as many questions as possible.

1. Please indicate the rationale or philosophical bases for your design.

2. What are your broad goals and objectives for this program?

3. List or attach your performance or behavioral objectives.

4. For what types of employment or advanced training do you intend to prepare trainees?

5. What will be your "financial base" or means of sustaining the program once operational?

6. Please specify the amount and type of trainee support (e.g., stipend, tuition relief, etc.).

* 7. What is the full time equivalence of the involved staff?

8. What are the professional areas or disciplines they represent?

9. What methods of recruitment will be used?

10. What will be your trainee selection criteria?

11. How many trainees do you anticipate beginning the program?

12. In your RDD&E program will any particular emphasis be placed on some specific content areas or types of material? Please describe.

* 13. How many of your staff will be devoting some percent of their time to the program?

14. Do you have any plans for combining training programs or activities from several areas or disciplines? If yes, please list the areas or disciplines and explain what the contribution of each will be.

15. What degrees will be awarded?

Department	Degree

16. We assume that RDD&E training programs require direct support for training activities and indirect support from funded research in the department. List three or more of the most recent projects in your department which were funded from outside the college or university.

Project	Date project was initiated	Approximate amount of funding	Source

17. What are your plans for evaluation with regard to the following:
    achievement of performance objectives by trainees
    staff performance
    training activities
    instructional materials
    broad goals

* 18. If two or more of the four training components (RDD&E) are involved in your program, which has (have) been the most difficult to develop?

* 19. If you do not have all four training components (RDD&E) in your program, why do you intend to change, eliminate or reduce the emphasis on one or more?

* 20. Which of the training activities in your program are most productive as you have evaluated them so far?

* 21. Which of the training activities in your program are least productive or effective? Please explain why.

* 22. What percent of the trainees completing your program go on to do graduate work in education research?

II

As a part of our interest in the state-of-the-art in undergraduate RDD&E training programs we are compiling operational definitions of the following four terms: Researcher, Developer, Disseminator and Evaluator. Please give us your definitions of each of the terms and list briefly the skills or competencies needed by people in these roles.

Researcher

Operational definition _____

_____

Skills and competencies _____

_____

* These questions apply only if your program has passed the design or development stage.

Developer

Operational definition _____

_____

Skills and competencies _____

_____

_____

Disseminator

Operational definition _____

_____

Skills and competencies _____

_____

_____

Evaluator

Operational definition _____

_____

_____

_____

Name of Respondent _____

Title of position in program _____

APPENDIX G

TRAINEE QUESTIONNAIRE

The Undergraduate RDD&E Training Program

I. General Information

A. How did you first hear of the research training program?

_____

_____

_____

B. What encouraged you to participate in the program?

_____

_____

_____

C. What is your undergraduate major?

_____

D. Do you plan to pursue a career in educational research?
Please explain: _____

_____

_____

_____

_____

_____

* 18. If two or more of the four training components (RDD&E) are involved in your program, which has (have) been the most difficult to develop?

* 19. If you do not have all four training components (RDD&E) in your program, why do you intend to change, eliminate or reduce the emphasis on one or more?

* 20. Which of the training activities in your program are most productive as you have evaluated them so far?

* 21. Which of the training activities in your program are least productive or effective? Please explain why.

* 22. What percent of the trainees completing your program go on to do graduate work in education research?

II

As a part of our interest in the state-of-the-art in undergraduate RDD&E training programs we are compiling operational definitions of the following four terms: Researcher, Developer, Disseminator and Evaluator. Please give us your definitions of each of the terms and list briefly the skills or competencies needed by people in these roles.

Researcher

Operational definition _____

_____

Skills and competencies _____

_____

* These questions apply only if your program has passed the design or development stage.

III. Trainee Ratings of Training Experiences

Please consider the following list of course work and other training experiences. Using the rating code, give your opinion for each applicable area.

Rating Scale

A. Extremely valuable as an educational research experience.

B. Potential value for a future career.

C. Of some value but not particularly applicable to the program.

N/A. Not applicable or not covered during the research training program.

RATING CHART

		A	B	C	N/A
1.	Classes in statistics				
2.	Classes in research design and methodology				
3.	Classes in professional education				
4.	Trainee seminars				
5.	Trainee periodic reports				
6.	Researcher/trainee seminars				
7.	Field trips				
8.	Trainee relationship to Advisor				
9.	Trainee relationship to other trainees				
10.	Classes in your particular area of specialization				
11.	Practicum experience (off campus)				
12.	Assigned readings				
13.	Overall subject content of classes				
14.	Continuity of the project				
15.	Future value of the overall research project for you				
16.	Advisor participation in project				

IV. Organization and Orientation Aspects of the Program

Using the rating scale below, please respond to each of the following if they apply to your training program.

Rating Scale

1. Emphatically agree
2. Agree
3. No opinion
4. Disagree
5. Emphatically disagree

RATING CHART

	1	2	3	4	5
1. The objectives of this program were clear					
2. The objectives were realistic					
3. The program was well organized					
4. The program was organized so that the trainees worked well together as a group					
5. The interaction of the trainees was valuable					
6. My time in this program has been well spent and worthwhile from the standpoint of a future career					
7. This program encouraged me to plan a future career in educational research					
8. More practicum experience should have been required					
9. The program provided close interaction between trainees and advisors which was valuable					
10. Trainees should have a larger part in planning future training activities					

V. Other comments

APPENDIX H

FREQUENTLY ASKED QUESTIONS

Trainee Interviews

1. How did you first hear about the program?
2. Do you feel that trainees should receive financial support for their participation in the program?
3. What are your major and minor fields of study?
4. What is the most valuable training activity in your program?
5. What do you like best about the program?
6. Do you have an independent research project? If so, please describe it.
7. What parts of the program would you like to change?
8. What are your career plans?
9. What type of research facilities are available to you?
10. Please describe your relationship with your faculty advisor.
11. What are your plans concerning graduate school?
12. What kind of academic background should one have before participating in this program?
13. What part of the program has been the hardest for you?
14. In what kinds of educational research related activities do you participate off-campus?
15. How many years have you participated in the program?
16. If you assist a faculty member with his research project, please describe your role.
17. Would you encourage other students to participate in this program?
18. Were you aware of the program before you were recruited for it?

Director Interviews

1. Why do you favor (not favor) a financial stipend for participating students?
2. What future do you anticipate for your program?
3. What type of research facilities are available for the participating students?
4. Does your program include seminars, independent research projects, and/or internships? Please describe.
5. Do outside specialists participate in your program?
6. Please describe the faculty/student relationship in your program?
7. Are most of the faculty members involved in this program actively engaged in educational research?
8. If you were going to change parts of your program, what would you change and why?
9. What are your recruitment procedures?
10. Describe your selection criteria.
11. Are most of your recruits housed in a specific department?
12. Please describe the inter-departmental arrangements, if any, designed into your program.
13. What kinds of research projects are some of your trainees handling?

APPENDIX I

List of directors interviewed:

Dr. Robert Bargar - The Ohio State University

Dr. James Gunnel - Tuskegee Summer Institute (Ohio State)

Dr. Joseph Ellis - Northern Illinois University

Dr. J. William Moore - Bucknell University

Dr. John Feldhusen - Purdue University

Dr. Herbert Richards - University of Virginia

APPENDIX J

CODED FORMAT

FOR

DIRECTOR'S QUESTIONNAIRE

The Undergraduate RDD&E Training Program

I. Current Status of the Undergraduate RDD&E Training Program

_____ A. Under design, "idea stage", just beginning to look into it, "drawing board" stage;

_____ B. Development stage, possess definite financial/staff/space commitment, "planning" stage;

_____ C. Operation stage, activation stage, work is underway;

_____ 1. initial period

_____ 2. middle of the planned scheduled program

_____ 3. near completion and end of program

_____ 4. established on-going program

_____ 5. have completed such a program but no longer operating.

II. Essential Training Activities

Check the following training activities which are essential in your undergraduate RDD&E training program and give descriptions where called for.

A. Standard Courses

1. Graduate (list and classify in the following content areas - Sociological aspects, Psychological aspects, Statistics, General Research, Evaluation and Measurement Procedures and Integrational or capstone)

Title: _____

_____

Content Area: _____

_____

Title: _____

_____

Content Area: _____

2. Undergraduate (list and classify in the same content areas as in (1) above)

Title: _____

_____

Content Area: _____

Title: _____

_____

Content Area: _____

B. Special Courses created for the RDD&E program (classify the same as in (1) and (2) above.

Title: _____

_____

Content Area: _____

Title: _____

_____

Content Area: _____

C. Practicum RDD&E activity

_____ 1. Professor initiated

_____ 2. Cooperatively initiated

_____ 3. Student initiated

_____ 4. Director assigned

D. Field trips

_____ 1. Other Research Centers

_____ 2. Conventions

_____ 3. School System

E. _____ Visiting Specialist

III. Descriptive Information About the Training Program

If you have prepared printed materials which answer any of these questions, please submit in lieu of a written response. The respondent should complete as many questions as possible.

A. Please indicate the rationale or philosophical bases for design. (attempt to specify categories, if successful, make summary of underlying themes.)

B. What are your general objectives for this program? (Refer to type of program, impact on education, etc.)

C. List your specific objectives. (Classify according to or belonging to one of the following areas: knowledge, application, orientation.)

D. For what types of employment or advanced training do you intend to prepare trainees?

1. IDD&E employment (please list)

2. Advanced training (list)

E. Indicate below the relative percent of your total RDD&E program efforts devoted to each possible component, regardless of its stage.

	R	D	D	E
0 - 10%				
11 - 20%				
21 - 30%				
31 - 40%				
41 - 50%				
51 - 60%				
61 - 70%				
71 - 80%				
81 - 90%				
91 - 100%				

IV. Detailed Program Information

A. What will be your "financial base" or means of sustaining the program once operational?

_____ 1. Outside funding

_____ a. Government

_____ b. Private

_____ 2. University funding

_____ 3. University/outside

B. Please specify the amount and type of trainee support.

		Amount			
_____ 1.	Stipend				
_____ 2.	Tuition relief	0-50	50-100	100-150	150-200
_____ 3.	Variable/incidental				

C. Please list other resources, facilities and enrichment activities.

_____ 1. Field trips

_____ 2. Office spaces

_____ 3. Computer availability

_____ 4. Other (specify) _____

D. How many of your staff will be devoting some percent of their time to the program?

_____ 1-2

_____ 3-4

_____ 5-6

_____ 7-8

_____ 9-10

_____ 11-12

_____ 13-14

_____ 15-16

_____ 17-18

_____ 19-20

E. What is the full time equivalence of the involved staff?

_____ 1-5 _____ 11-15

_____ 6-10 _____ 16-20

F. Please describe the institutional setting.

1. geographic location

_____ a. Northeast U.S.

_____ b. Southeast U.S.

_____ c. Mideast U.S.

_____ d. Northwest U.S.

_____ e. Midwest U.S.

_____ f. Southwest U.S.

2. Public or Private

_____ a. Public

_____ b. Private

3. Size

_____ a. 0-5,000 students

_____ b. 5,000-10,000 students

_____ c. 10,000-15,000 students

_____ d. 15,000-25,000 students

_____ e. 25,000-30,000 students

_____ f. 30,000-35,000 students

_____ g. 35,000-40,000 students

4. Departmental arrangements

_____ a. multidisciplinary

_____ b. interdisciplinary

_____ c. single discipline

5. Existence of relevant graduate programs

_____ a. yes

_____ b. no

G. What are the professional areas of disciplines represented by the trainees?

_____ education

_____ other disciplines (specify)

H. What methods of recruitment will be used?

_____ 1. sales letter

_____ 2. notices on bulletin board

_____ 3. ads in school newspapers

_____ 4. personal (direct) contact

_____ 5. referrals

_____ 6. normal admission procedures (regular catalog description)

I. What will be your trainee selection criteria?

_____ 1. grade point coverage

_____ 2. standardized achievement and personality tests

_____ 3. personal interviews

_____ 4. research orientation

_____ a. expressed interest

_____ b. scale to measure orientation

_____ 5. faculty recommendation

_____ 6. course work

_____ 7. college level or academic understanding

J. How many trainees do you anticipate beginning the program?

_____ 1. 1 - 5

_____ 2. 6 - 10

_____ 3. 11 - 14

_____ 4. 15 - 19

_____ 5. 20 - 24

_____ 6. 25 - 29

_____ 7. 30 - 34

_____ 8. 35 - 39

_____ 9. 40 - 44

K. Are advanced trainees permitted to take graduate level courses?

_____ 1. Yes

_____ 2. No

L. In your RDD&E program will any particular emphasis be placed on some specific content areas or types of material?

1. Methodological

_____ a. Problem conceptualization (proposed writing) RDDE

_____ b. Type of RDD&E research (case studies)

_____ c. Design

_____ d. Sampling (Survey)

_____ e. Measurement

_____ f. Statistics

_____ g. Report Writing

L. (Continued)

_____ h. Review of literature

_____ i. Library skills

_____ j. Data processing

_____ k. Project evaluation

2. Other substantive areas

_____ a. Education

_____ b. Psychology

_____ c. Sociology

_____ d. Anthropology

_____ e. Economics

_____ f. Other (specify) _____

3. Materials most frequently used (specify)

_____

M. Do you have any plans for combining training programs or activities from several areas or disciplines? If yes, please list the areas or disciplines and explain what the contribution of each will be.

1. _____yes.

a. multi or interdisciplinary staff

_____

b. extent of formal connection with other departments

_____

c. fields _____

M. (Continued)

2. _____ no.

3. _____ possible.

N. What degrees will be awarded?

Degree	Major	Minor	Field of Degree
A. B.			
B. A.			
B. S.			
Other			

O. We assume that RDD&E training programs require direct support for training activities and indirect support from funded research in the department. List three or more of the most recent projects in your department which were funded from outside the college or university.

Project	Title	Date Project Initiated	Source	Funding
		_____1964-65	_____Gov't	_____0-10K
		_____1965-66	_____Private	_____11-20K
		_____1966-67		_____31-40K
		_____1968-69	_____Govt/ Private	_____41-50K
		_____ 1969-70		

P. What are your plans for evaluation with regard to the following?

1. Achievement of performance objectives by trainees

_____ a. program organization and structure

_____ b. student grades on tests

_____ c. career plans

_____ d. teacher ratings

_____ e. sttitudinal measures

_____ f. student evaluation

2. Staff performance, training activities and instructional materials

_____ a. student evaluation

_____ b. personal observation

3. Broad goals (list within the framework of knowledge, application and orientation)

_____

_____

_____

_____

V. Director Evaluation of Selected Organizational and Training Aspects of the program

A. If two or more of the four training components (RDD&E) are involved in your program, which has (have been) the most difficult to develop?

_____ 1. R

_____ 2. D

_____ 3. D

_____ 4. E

B. If you do not have all four training components (RDD&E) in your program, why do you intend to change, eliminate or reduce the emphasis on one or more?

R D D E

1.

_____ No change

_____ Eliminate

_____ Reduce emphasis

_____ Increase emphasis

2. Some of the reasons most frequently mentioned were:

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

C. Which of the training activities in your program are most productive as you have evaluated them so far?

_____ 1. internship experience

_____ 2. seminar

_____ 3. lectures

_____ 4. field trips

_____ 5. independent project

_____ 6. class discussions

_____ 7. informal discussions

_____ 8. class projects

_____ 9. cooperative project

D. Which of the training activities in your program are least productive or effective? Please explain why?

_____ 1. internship experience

_____ 2. seminar

_____ 3. lectures

_____ 4. field trips

_____ 5. independent projects

_____ 6. class discussions

_____ 7. informal discussions

_____ 8. class projects

_____ 9. cooperative projects

VI. Operational Definition of the Occupational Terms

Researcher, Developer, Disseminator and Evaluator

Write definitions (operational) for the following:

Researcher

operational definition _____

_____

_____

skills and competencies _____

_____

Developer

operational definition _____

_____

_____

skills and competencies _____

_____

Disseminator

operational definition _____

_____

_____

skills and competencies _____

_____

Evaluator

operational definition _____

_____

_____

skills and competencies _____

_____

Name of college with RDD&E program

_____

Name of individual doing the analysis

_____