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ABSTRACT

A core staff was assembled at the University of Massachusetts in 1966 to establish doctoral level programs to train individuals for applied research positions within the pedagogical community. These programs attempted to develop curriculum and instruction research, research evaluation, and research diffusion competencies. A total of 45 individuals received fellowships over the 6-year project span. The 40 fellows who completed the program are presently employed as follows: 15 accepted college teaching positions, 6 accepted public school administration positions, 6 accepted staff appointments or project directorships within research and development centers, 4 accepted secondary school teaching positions, and 4 accepted combination college teaching/administration positions. Program evaluations revealed the fellows to be better trained for available jobs than most graduate student peers and revealed the programs evolved to be most appropriate for training applied educational researchers. (Author/HS)

FINAL REPORT
Project No. 6-1877
Grant No. OEG-0-71-3484 (520)

THE DEVELOPMENT OF THREE APPLIED RESEARCH TRAINING PROGRAMS

August, 1972

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

Office of Education
National Center for Educational Research

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Original Project Intent

A core staff was assembled in 1966 to establish doctoral level programs to train individuals for applied research positions within the pedagogical community. These programs attempted to develop curriculum and instruction research, research evaluation, and research diffusion competencies. Individuals who enroll in these programs were to be trained for positions in research laboratories, in school systems, and in colleges and universities.

Each of the proposed doctoral level programs was intended to be a second concentration area that is allied with a prime concentration area in education, psychology, sociology, anthropology, and various other fields. Students pursuing these second "majors" earned twenty-one hours of graduate credit toward the doctorate degree. Distinctive aspects of the programs included the following: first, each afforded applied research training opportunities -- namely, curriculum and instruction research, evaluation research, and diffusion research programs -- at a time when such skills were sorely needed; second, each was multi-disciplinary in design -- courses offered encompassed philosophy, statistics, psychology, and sociology in addition to education; and third, each provided varied opportunities for students to relate classroom experiences to field situations.

Specific objectives set forth included the following:

1. To establish three applied research programs which would be elected and pursued as second "majors" within designated doctoral programs at the University of Massachusetts.
2. To incorporate interdisciplinary and field resources as an integral part of the program.

3. To compile case histories of students who elect the programs in order to gain insight into the effectiveness of the programs and into the characteristics of individuals who -- after graduation -- perform effectively in applied research roles.

As the program matured, the first objective was modified considerably; whereas, the second and third remained intact.

Project Modifications

Two major changes occurred in the project over its six-year operation. The first stemmed from difficulties in maintaining a stable staff to operate three separate program components. Faculty departures from the University caused considerable hardship on the Fellows. Rather than adhere to the rather rigidly defined separate program requirements, the staff decided to pool program opportunities and permit the Fellows to define their own emphases within this parameter.

When Dwight Allen joined the School of Education as Dean during the third year of the program, he eliminated the course requirement concept for all School programs. Since Fellows were no longer bound to the existing parameter of courses as a result of the Dean's edict, they enjoyed much lattitude in defining their graduate emphases. The ancillary nature of the program was soon altered to become the primary emphasis or a dual emphasis. During the past several years, many Fellows focused their doctoral emphasis upon what was initially conceived to be an ancillary operation within the graduate school.

The second change proved to be a severe shock to the core staff. After the third year, the annual operating budget was reduced to about one-fifth its prior level by University officials. These officials equated the Fellows' program to other NDEA and NSF programs operating on campus, and consequently confiscated the project funds. Appeals to USOE for help proved to be fruitless. So, many unfortunate results occurred.

It was no longer possible to bring in outside authorities, to permit Fellows to travel extensively, or to subsidize Fellow's research and development work. After the fourth year, both the project office and a large room used by the Fellows for study and meetings were lost.

During the final two years, only perfunctory financial commitments could be honored.

Fortunately for the program, many other areas of the School of Education enjoyed abundant resources for a variety of R.D. and D purposes. Many opportunities existed for the Fellows to carry on the involvement tradition which had been established during the project's early years.

Project Operations

An overview of the six-year experience is offered which takes into account the staff, the program curricula, and the student. Pertinent information is offered about what was offered and about the impact of these experiences upon the Fellows.

The Staff. The original core staff included four members of the School of Education and one member of the Psychology Department at the University of Massachusetts. This core changed considerably over the project's lifetime, primarily due to persons leaving the university. Individuals included in the core staff at one time or another represented fields such as sociology, anthropology, economics, and psychology. In addition, individuals representing labor-management relations, statistics, and philosophy were peripherally involved in the undertaking.

At first, core staff members were reimbursed for offering seminars and independent study opportunities for the exclusive benefit of Fellows enrolled in the program. After the first several years of operation, this incentive was dropped. Such inducement was no longer required to involve faculty in the program. In fact, after the second year more opportunities existed for the Fellows each semester than they could schedule. The variety permitted tailor-made opportunities to be pursued by the Fellows.

Beside the regular University faculty involvement in the program, many outside authorities were invited to offer colloquia and workshops for the Fellows. Authorities like Jason Millman of Cornell University, Norman Kurland of the New York State Department of Education, Mario Fantini of the Ford Foundation, William Gephart of Phi Delta Kappa, Glenn Boerrigter and Richard McCann of the U.S. Office of Education, Myron

Lieberman of the City University of New York, and others, interacted with the Fellows and core staff members.

In addition, the Fellows regularly visited and spent time working with individuals situated in local education agencies, state departments of education, regional laboratories or research and development centers, the U.S. Office of Education, and various private centers of R.D. and D.

The Program Curricula.

Considerable time was spent early in the project defining curricula for the three components of the applied research training program. Opportunities for the Fellows were limited within the School of Education at that time; hence, much of the course-type experience had to be conceptualized and tried out. Trial and error strategies eventually meshed well-qualified people with appropriate courses and the program seemed on its way.

The program which evolved proved to be rather rigid and inflexible unfortunately. Given the fact that Fellows had to assimilate this experience with a doctoral major presented significant scheduling problems. Fellows were expected to add at least seven courses to their graduate load from among the following options:

Core Courses (6 Hours)

1. Education 991. Research Methodology and Materials 3 (Schweiker)
2. Psychology 745. Advanced Applied Statistics 3 (Myers) or equivalent

Specialist Courses (15 Hours)

A. Research Evaluation. (15 Hours).

1. Education 653: Educational Tests and Measurements 3 (Schweiker)
2. Education 700: Field Problem 3 (Staff)
3. Education 994: Research Design and Analysis 3 (Schweiker)
4. Philosophy 530: Philosophy of Science 3 (Swanson)

5. Sociology 797: Survey Design and Analysis 3 (Sussmann)

B. Research Diffusion. (15 Hours).

1. Education 715C: Workshop in Interdisciplinary Research 3 (Schumer & others)

2. Education 705B: Seminar in Research Diffusion 3 (Wolf & Others)

3. Education 700: Field Problem 3 (Staff)

4. Government 525: Public Opinion in Politics 3 (Fenton)

5. Sociology 712: Social Change 3 (King)

C. Curriculum and Instruction Research. (15 Hours).

1. Education 715C Workshop in Interdisciplinary Research 3 (Schumer & others)

2. Education 766: Curriculum Development: Theory & Research 3 (Clegg)

3. Education 715: Research Practicum in the School 3 (Clegg, Cebula, Anthony, Langlois)

4. Psychology 601: Educational Psychology 3 (Frase)

5. Psychology XXX: Classroom Learning and Instruction 3 (Schumer & Frase)

Details for each of the courses evolved over a three-semester period. A synopsis of each course is offered below:

Core Courses (6 Hours)

1. Education 991. Educational Research 3 (Schweiker)

The methods of research pertinent to education, with consideration of influential factors. Principles involved in selecting and preparing research materials. Statistics are studied chiefly from the standpoint of reporting and understanding research results.

2. Psychology 745. Advanced Applied Statistics 3 (Myers)

Various experimental designs, the assumptions underlying their use, and the appropriate statistical analyses; orthogonal and randomized designs, trend analysis, non-parametric techniques, and multi-variate analysis.

A. Research Evaluation (15 Hours)

1. Education 653. Educational Tests and Measurements 3 (Schweiker)

A survey of existing tests and measuring devices with emphasis upon their applications, their validity and reliability, and their impact and utilization. Opportunities are provided for administering selected tests to intended student samples.

2. Education 700. Field Problem 3 (Staff)

Field problems will be arranged to suit the individual needs and capabilities of the candidate. They will involve (1) participation in research projects underway, (2) service as an intern in a research center, or participation in a field seminar established to tackle a pedagogical problem in a school setting. An attempt will be made to relate the candidate's field experience to a dissertation topic.

3. Education 994. Research Design and Analysis 3 (Schweiker)

Theory and techniques involved in analysis of various experimental designs pertinent to education, employing analysis of variance and covariance methods.

4. Philosophy 530. Philosophy of Science 3 (Swanson)

A critical analysis of the structure of scientific method and the language of science, the respective roles of induction and deduction in science, and the status of theoretical terms.

5. Sociology 797. Survey Design and Analysis 3 (Sussmann)

Design and analysis of descriptive and explanatory sample surveys. Special attention to the problems of longitudinal studies designed to evaluate the effects of a complex experience.

B. Research Diffusion (15 Hours)

1. Education 715C. Workshop in Interdisciplinary Research 3 (Schumer & others)

Review and analysis of research conceptualization, design, and results in the life, physical, and social sciences. Researchers representing these disciplines will contribute directly to the seminar.

2. Education 705B. Seminar in Research Diffusion 3 (Wolf & others)

Efforts to diffuse research in agriculture and rural sociology, medicine, the military, the social sciences, and the world of commerce are examined, research diffusion models are analyzed, and school research consumption is studied.

3. Education 700. Field Problem 3 (Staff)

See description under listing A 2.

4. Government 525. Public Opinion in Politics 3 (Fenton)

Opinion and communication as aspects of the political process with emphasis upon communication through mass media. The relations between mass attitudes and communication and political institutions and the formation of public policy.

5. Sociology 712. Social Change 3 (King)

Analysis of change as a process, especially the factors making for acceptance or rejection of innovations. Intra-societal sources of change. Consequences of contacts between societies, with emphasis on underdeveloped areas.

C. Curriculum and Instruction Research (15 Hours)

1. Education 715C. Workshop in Interdisciplinary Research 3 (Schumer & others)

See description under listing B 1.

2. Education 765. Curriculum Development: Theory and Research 3 (Clegg)

Curriculum design and theory, the dynamics of change, current research studies and experimental programs, and theories of teaching and learning as they affect curriculum design.

3. Education 715. Research Practicum in the School 3 (Clegg, Cebula, Anthony, Langlois)

Theoretical topics, pertaining to curriculum and instruction, are examined and related to planned observations in the Mark's Meadow Laboratory School and the Amherst Regional High School.

4. Psychology 601. Educational Psychology 3 (Frase)

Psychological principles and facts fundamental to educational tuations. Major areas studied are: Learner, learning, adjustment, guidance, teacher, teaching methods, evaluation and measurement.

5. Psychology XXX. Classroom Learning and Instruction 3 (Schumer & Frase)

To be worked out. The course will focus upon the basic laws of learning and their implications for classroom instruction.

Field work was particularly tough to arrange with the heavy weekly course schedule. Fellows generally cut class to capitalize upon field opportunities as they appeared. After Dwight Allen became Dean, more independent study options were made available to graduate students. Fellows quickly took advantage of this new freedom and arranged numerous off-campus experiences which earned independent study credit.

When all program requirements were dropped, each Fellow had to assume a responsibility for plotting his academic experience. As options and opportunities increased, the esprit de corps of the program, for several years a powerful constructive force, noticeably declined. Individual pursuit of academic interests and frequent off-campus visitation contributed to the demise of one of the program's early strengths -- the close interaction of individuals representing a variety of backgrounds and capabilities.

Much informal contact among the Fellows created a serendipitous program benefit during the early years. These contacts manifested themselves in shared research interests, much critical give and take, cooperative involvement in field problems, and considerable R.D. and D. productivity. In the later program years, these interactions declined and eventually disappeared. During the last year of the program, the Fellows were unknown to each other for all practical purposes.

The Students.

The original criteria for selecting Fellows seems quite humorous in retrospect. Core staff members sought to attract outstanding people for what was regarded as a unique graduate experience. They decided reasonably mature graduate students who have had some kind of related experience "in the real world" were prime prospects for an applied research training program. The following guidelines were utlized in 1966 to select fifteen Fellows for the three program components:

A. Research Evaluation

1. An expressed interest in contributing to the field of education.
2. Statistics 121 and 551 or their equivalent.
3. A mathematics orientation is desired.
4. Admittance to the university's doctoral program, and pursuing a major concentration in Education, Sociology, Psychology, Anthropology, or a related field.
5. Ph.D. Computer Science tool course.

B. Research Diffusion

1. An expressed interest in contributing to the field of education.
2. Statistics 121 and 551 or their equivalent.
3. Admittance to the university's doctoral program, and pursuing a major concentration in Education, Sociology, Psychology, Anthropology, or a related field.
4. Ph.D. Computer Science tool course.

C. Curriculum and Instruction Research

1. An expressed interest in contributing to the field of education.
2. Statistics 121 and 551 or their equivalent.
3. A valid teaching certificate.

4. Admittance to the university's doctoral program, and pursuing a major concentration in Education, Sociology, Psychology, Anthropology, or a related field.

5. Ph.D. Computer Science tool course.

Unfortunately, USOE couldn't commit funds until three months before the program was to begin. Since the funding seemed shakey, no advanced word about the program was released. Once the money was committed, frenetic efforts were made to attract applicants. Fifteen people of variable, but generally impressive, quality were recruited and the program was under way.

In subsequent years, candidates were recruited on the basis of GRE and Miller Analogy scores, prior relevant experiences, staff impressions based upon personal interviews and candidates' expressed career intentions. Whether these procedures improved upon candidate selection isn't known. They were adopted because they seemed more appropriate.

A total of forty-five individuals received Fellowships over the six-year project span. These Fellowships were held less than one semester up to three calendar years. Forty Fellows either completed the program or are close to completion; five dropped out. Among those who completed the program, twenty-nine were recruited from within the field of education. Eleven were recruited from such diverse fields as history, psychology, English, economics, sociology, physics, and management.

When a new Fellow entered the program, a file was opened in his name. This file served to accumulate each candidate's academic record while enrolled at the University. Completed courses, accounts of field experiences, representative papers, and other documents were stored. These documents were used to judge Fellows' progress, to provide useful counsel from time to time, to prepare interim project reports for USOE,

and for placement purposes.

Analyses of these records revealed a strong commitment on the part of most Fellows to the concept of disciplined inquiry. Their preparatory work in R.D. and D. was well beyond that of most doctoral students within the School of Education; written reports and field work revealed an ability to use prior training to advantage; and dissertations completed rank among the most sophisticated on file in the School of Education library.

Many Fellows were routinely sought out by peers and faculty for advice on R.D. and D. problems. This advice was formalized by providing an advisory service to students and faculty. The service was housed within the School of Education, and operated on a regular schedule which was augmented by appointments. Many faculty and students utilized the service until it was terminated due to loss of quarters.

Individuals completing the program usually were able to choose from among a variety of job offers. Most overtures were teaching positions within colleges and universities or administrative posts within local education agencies. Other job prospects included public school teaching, project directorships, college administration, staff appointments to R.D. and D. centers of various types, and state departments of education.

Among the twenty-nine candidates drawn from the field of education, eight accepted college teaching positions, six accepted public school administration positions, five accepted staff appointments or project directorships within R.D. and D. centers of various types, four accepted secondary school teaching positions, three accepted combination college teaching/administration positions, and three have not yet graduated. Nearly three-quarters of these graduates are engaged in work related in some way to the applied research training program. Most of the remaining Fellows, not drawing upon their program experience, accepted positions as

a teacher or professor of a subject matter area.

Among the eleven candidates drawn from outside the field of education, seven accepted college teaching positions, one accepted a combination teaching/administrative position, one accepted a project directorship, and two have not yet graduated. Only two people among those who completed the program are engaged in work related to the training program. Most are pursuing careers in their primary subject matter areas.

Evaluation

The specific objectives originally set forth in the 1966 proposal are treated in this section. Subjective interpretation and strong inferences based upon much data are offered as one means of ascertaining the degree to which the original intentions were realized. Extensive demographic data were accumulated over the six-year project span about courses offered, field experiences completed, Fellows' accomplishments, and employment accepted.

The Program. At the time the applied research training project was funded, the School of Education employed two people in the R.D. and D. domain. One was a full-time administrator responsible for acquiring and managing external fiscal resources; the other taught research-oriented service courses needed by doctoral students. No program existed in the R.D. and D. area.

This project attracted students which in turn contributed to staff acquisition. These new staff members spent considerable time building graduate programs within the R.D. and D. area. The new programs paralleled two of the three areas set forth in the project. Their work charged the ancillary aspect of the project to a full-time aspect as mentioned previously.

After the three separate research training specialties were pooled and after all program requirements were eliminated, the project more closely identified with the emerging R.D. and D. areas of the School of Education and the educational psychology area of the Psychology Department.

A serendipitous benefit was realized recently by individuals responsible for building the R.D. and D. component within the School of Education. The American Council of Education released the results of a

study that ranked educational research programs currently operating within colleges and universities according to their quality. Their ranking was based upon the perceptions of numerous research-oriented individuals survey. The School of Education's R.D. and D. center was ranked thirteenth in the country, ahead of most Universities responsible for training the [illegible] staff. Not a bad bit of recognition for such a young operation. And the School's R.D. and D. center owes its existence to the applied research training project.

To recapitulate, three specialties were pooled into one bank from which Fellows selected appropriate experiences. When program requirements were eliminated, the Fellows tailored their own programs and used performance criteria to evaluate progress. The ancillary aspect of the program proved to be unwieldy, so it was eliminated as a requirement. Fellows then determined the nature of their own program.

Much freedom existed within the program during the past three years for the Fellows to define their programs. This freedom proved to be both a benefit and a handicap. Benefits included the utilization of most diverse academic and field experiences related to the field of education. Handicaps included the loss of program esprit de corps and the resulting Fellows interaction, and a decline of interdisciplinary interaction within the program.

No specific project-based applied research program exists any longer within the School of Education. Instead, comprehensive, in-depth opportunities are available covering all three original project components for graduate students. These opportunities include survey experiences, in-depth experiences, and major graduate-level concentrations. Here is a prime example of the institutionalization of a federally-funded pilot program.

Program Specifies. In 1966, graduate students majoring in education seldom wandered beyond the confines of the School's curriculum. The School of Education operated as if it were a leper colony sealed off from the rest of the University community. The applied research training program altered this condition quite starkly.

Faculty and student cross-discipline interaction within the program was responsible for attracting many other students to share similar experiences. Much team-teaching and team-research, involving students and faculty across discipline lines, characterized the early program years. By the end of the third year of the program, Fellows who were education majors had earned an impressive reputation for their work in courses offered by the psychology, sociology, computer science, and business departments of the university.

Since that time, options within the School of Education have become so abundant, that a marked decline has occurred in the pursuit of interdisciplinary experiences among the Fellows. Interdisciplinary teams of teachers and/or researchers have declined considerably. Close contact is currently maintained only with the psychology department. Severe atrophy characterizes most of the other interdisciplinary interaction. While the opportunities still exist, in fact there is less cross-discipline behavior apparent at the present time among students interested in applied educational research matters.

More field opportunities are being utilized at the present time than at any previous time in the School's history. Extensive funds from a variety of grants and national interest in School of Education activities made this possible. Students work with local education agencies, state and national agencies, private concerns, and other colleges and universities on a routine basis. Experiences gained are usually most fruitful. As

a result of these opportunities, students are able to try out many of their theories and course experiences, under supervision, well before they graduate. Here is one of the real strengths of the current applied research training program.

The Students. In the previous section of this report, both the calibre of the Fellows as students and their placement upon graduation was discussed. The Fellows, as a group, rank among the most productive students ever to pass through the School of Education. This tradition has been maintained, based upon new students entering the programs at the present time.

Training carryover to job responsibilities revealed a mixed picture. Fellows who were recruited from the field of education, for the most part (3 in 4), use their program training on the job. Fellows who were recruited from fields other than education, for the most part (about 1 in 4), do not make use of their program training.

Among those who use their training, most draw upon only their most basic academic experiences on the job. These individuals seem overtrained for the tasks which are confronted. Based upon their current experience, the training could have been condensed and completed in a shorter period of time. Yet, their extensive background may have been a salient factor in the acquisition of positions now held. While a doctoral-level program certainly isn't required to do the work called for, holding the doctorate may have facilitated employment.

A composite portrait of program Fellows who were sought after on the job market would include prior experience as an educational practitioner, knowledge of the educational change process, disciplined inquiry skills (especially knowledge of project conceptualization and management, research design, and measurement and evaluation), and reasonable mastery

of a content area.

A comprehensive study of the concept of training applied education researchers was conducted by Fleury, Cappelluzzo and Wolf in conjunction with this project. These researchers gathered demographic data about three concerns: first, information pertaining to research data about Research, Development and Diffusion (R.D. and D.) training, second, infromation pertaining to practices of current training programs; and third, information pertaining to expectations of potential employers of R.D. and D. personnel. Data were gathered from existing published literature treating research training and from all of the chief state school officials, all of the USOE's operating research training programs, all of the Massachusetts' Superintendents, and fifteen research institutes which were arbitrarily selected from among a large population of such agencies. Results obtained proved to be most intriguing.

Available evidence about R.D. and D. training programs seems to be reflected in the practice of programs surveyed. However, changing pedagogical conditions with concomitant changes in the utilization of research, development and dissemination personnel, suggest both the existing research base on training practices and many training programs may be too narrowly conceived to cope with conditions. While colleges and universities continue to absorb most of the available "R" talent, they are in direct competition with local school districts, state and federal agencies, and independent research agencies for the few "D. and D." specialists trained each year. As the demand for "D. and D." talent increases, provision will have to be made for reliable suppliers.

Specific conclusions based upon these data include the following:

(1) That there will be shortages of applied R.D. and D. personnel for the field of education in the immediate future;

(2) That training programs studied are not structured to cope with the development and diffusion personnel needs expressed;

(3) That employers surveyed may be called upon to initiate intensive in-service training programs to meet agency requirements for talent other than at the technician-scholar level;

(4) That a need for programs at a level other than the doctorate exists to meet employer requirements;

(5) That trainers and employers seem to be operating at cross-purposes in terms of candidate selection, job responsibilities, and exposure to the field of education;

(6) That employers emphasize versatility on the part of individuals seeking R.D. and D. roles, whereas most training programs surveyed prepare candidates for the "R" part.

Generally speaking, the six-year program expedited at the University of Massachusetts was "right on". It missed the mark by focusing upon the doctoral level. Otherwise, program efforts were in tune with data reported.

Discussion

There is no need to stress completion of a doctorate as a requirement of an applied research training program. While the doctorate may enhance the candidate's application for a position, it causes him to become overtrained for the field of education's requirements at the present time and it opens up job options that remove him from the kinds of problems he has been equipped to tackle. Rather than repeat the doctoral experience, a preferred course of action would be to delimit a program based upon the ideal portrait of an applied educational researcher mentioned in the previous section. This would be a concentrated program which stressed performance outcomes and field practice.

The program should consist of a core of requirements and an array of options. Candidates should select options based upon their prior experiences and current needs. Field experiences should be carefully planned and systematically monitored. Graduates of such a program would meet a set of pre-determined performance criteria.

Much value seems to exist in esprit de corps within such a program. Every effort should be made to cluster a small group of candidates and provide frequent exposure to common experiences. One serendipitous benefit of this contact seems to be considerable self-generated worthwhile activity by the involved people.

Candidates most likely to become involved in the field's persistent and thorny problems are those who have been drawn from the field of education itself. Six years of program experience revealed Fellows with prior pedagogical exposure were most likely to return to the field in an applied research capacity. And Fellows who returned to the field continued to remain active in their pursuit of pedagogical problems.

Finally, steps need to be taken to institutionalize applied research

positions within the field of education and to make these positions known to prospective candidates on a more systematic basis. Such jobs exist around the country and candidates are being trained to fill them. Unfortunately, "hunt and peck" search patterns seem to be operating at present to bring jobs and candidates together. More visible methods are needed to communicate job opportunities to individuals inclined toward an applied research career.