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An analysis of the effectiveness of selected short term summer training programs as sources of information about educational innovations.

Paul Anthony Leary
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AN ANALYSIS OF THE EFFECTIVENESS OF
SELECTED SHORT TERM SUMMER TRAINING
PROGRAMS AS SOURCES OF INFORMATION
ABOUT EDUCATIONAL INNOVATIONS

A Dissertation Presented
by
Paul A. Leary

Submitted to the Graduate School of the
University of Massachusetts in
Partial Fulfillment of the Requirements for the Degree of
DOCTOR OF EDUCATION
May 23, 1969
Major Subject: Administration
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Approved as to style and content by:

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Finally, to my wife Dee, a simple thanks is totally inadequate. Without her unselfish devotion, personal sacrifice, unswerving loyalty, and wise counsel, none of this could have been possible.
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CHAPTER I
INTRODUCTION

Problem Statement

"What is the mark of a successful professional gathering? The number and stature of those who gather? The duration or turbulence of the exchange of ideas? The acquisition or improvement of professional skills? The satisfaction or challenge carried home?

There are many sides to such a gathering, many characteristics to be evaluated, but, there are few standards. Partly because the characteristics are hard to measure, partly because standards vary from person to person, and partly because public judgments violate professional courtesy, the professional gathering is seldom evaluated.

Evaluation can stimulate and it can stifle. To some it is retribution, misguided meddling and unwanted exposure. To others it is correction and substantiation, a necessary step to planning and conducting the next professional gathering. (100:1)

Short term summer and academic year training programs for educators are given many names; conferences, seminars, workshops, institutes, etc. They are the most popular form of in-service education programs today. The main reason they are used so extensively, is that they ostensibly improve performance. Regardless of their specific purposes, (e.g., gaining new knowledge, gaining information on how to implement these new ideas, improving teaching methods, or gaining greater skill in utilizing resources), their basic premise for being is that of improved performance.

This study is an attempt to answer some of the questions raised in the first paragraph of the opening quotation. It will analyze selected short term summer programs concerned with educational innovation to determine influences of the programs upon the perceptions of selected program participants. The primary thrusts of this investigation will determine:
(1) the extent to which the programs are identified or perceived by participants as sources of information about educational innovations, and (2) the extent to which they are identified or perceived as sources of information contributing to the adoption of innovations. In short did the programs serve as a source of awareness of innovations, and did they "legitimize" decisions to adopt them.

This investigation with its emphasis on sources of ideas closely resembles studies done in the fields of Rural Sociology (54, 96, 97, 111) and Medicine (43, 44, 76). Only very feeble attempts in this direction have occurred in education (57).

The rural sociologist has long been pre-eminent in the research on diffusion and adoption of innovations. These sociologists' research history dates to the 1940's, when funded by the United States Department of Agriculture, they began their first studies. Their research over twenty years has brought about a vast body of empirical knowledge that forms the basis of viable, workable, generalizations about diffusion and adoption of new ideas, products, and practices. Their system of "change agents" (e.g., county agricultural extension agent) is of proven quality. This investigation can be viewed as an attempt to determine the effectiveness of short term summer programs as a "change agent" or "change mechanism" in the field of education.

The investigation will, as mentioned before, analyze the influence summer programs have on the perceptions of participants. Research of this type is valid because of the links that appear to exist between one's perception or attitude and one's behavior.

Remmers and Gage in their research have found: "A further character-
istic of attitudes is that they have an effect on behavior which may be so great that the attitude enables the prediction of behavior". (92:361)

A further substantiation of this outlook is provided by Malinowski, one of the world's most respected scholars, who said, "to the student of change what really matters is not the objectivity true past, scientifically reconstructed and all -- important to the antiquarian, but the psychological reality of today. The facets of change are not in the eye of the beholder, but in the mind of the participant in change". (70:29)

Many evaluations of short term training programs have taken place. Most often the evaluation takes the form of measuring subject matter acquisition or assessing participants and their supervisors opinions on the worth of the conference. Data of this sort, while useful, barely touch upon problems identified in the opening quotation. Indeed, it seems evident that more sophisticated investigation of the effectiveness of these programs is needed.

Most of these short term training programs have been evaluated as being nothing short of miraculous. Johnson found that "National Science Foundation institutes have been the greatest impetus for change in the history of education". (39:175) Karbal found that "workshops exert motivation for changing teacher behavior". (42:187) Miles has said "the summer training institutes sponsored by the National Science Foundation for teachers in various subject matter fields appear to generate an extraordinary sense of identification with an enterprise thought to be significant and meaningful". (39:472)

The Commission on Teacher Education of the American Council on Education has found that "Teachers who had previously exercised limited
influence in their home situations have returned from workshops with ideas, enthusiasm, and skills that have resulted in their rapidly becoming stimulating forces making for general improvement". (2:164) Most of the findings of the research on short term summer programs is best summed by Karbal when he said, "that the workshop is a potent force for in-service education is incontestable". (42:123)

This study offers the opportunity to determine if some of these prior claims are valid. So many claims are made of short term training programs, and so much money is spent on them, it is appropriate at this time to further, and hopefully, deeper, delve into their effectiveness.

Description of the Seminars and Institutes

Table 1
Summer Programs To Be Evaluated

<table>
<thead>
<tr>
<th>I/D/E/A Institutes</th>
<th>University of Massachusetts Workshop</th>
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<tbody>
<tr>
<td>1967</td>
<td>1968</td>
</tr>
<tr>
<td>Honolulu, Hawaii</td>
<td>Amherst, Massachusetts</td>
</tr>
<tr>
<td>1,000 participants</td>
<td>400 participants</td>
</tr>
<tr>
<td>1968</td>
<td></td>
</tr>
<tr>
<td>Amherst College</td>
<td></td>
</tr>
<tr>
<td>Davidson College</td>
<td></td>
</tr>
<tr>
<td>Mills College</td>
<td></td>
</tr>
<tr>
<td>College of South Utah</td>
<td></td>
</tr>
<tr>
<td>400 participants</td>
<td></td>
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The summer training programs that are to be evaluated are of three types. All are concerned with educational innovation, yet all are distinct in either time the conference was offered or who the sponsor and presenters were. A schematic representation of these training programs appears in Table 1.

The first group of seminars and institutes to be analyzed were jointly sponsored in the summer of 1967 by I/D/E/A (Institute for the Development of Educational Activities), the educational innovation division of the Charles F. Kettering Foundation, and PACE (Projects to Advance Creativity in Education) the nationwide program of educational innovation formed by the United States Office of Education under the auspices of Title III of the Elementary and Secondary Education Act of 1965.

This group of conferences were called the National Seminars on Innovation. They were held July 2 to 23, 1967 in Honolulu, Hawaii. Nearly 1,000 educators, including about 400 public school educators, and 500 Directors of innovative PACE projects attended.

The general objective of the program was to "enlarge the national effort to improve elementary and secondary education by broadening the impact of innovative projects and by improving the skills and expanding the knowledge of educators". More specific objectives included: enriching the participant's experience by: (1) Broadening their knowledge of existing research, theory, and practical application in education and related fields, (2) Providing training in the technical aspects of program management, and (3) Improving working relationships between local, state, and federal officials, and between theorists and practicing educa-
tors. (83:2) A detailed listing of topics covered, presenters and time schedules are given in Appendix D. All Fellows had their transportation paid and accrued no expenses while attending.

The second group of conferences to be evaluated took place in July 1968. Four in number, these conferences were held around the country and took the name Fellows Summer Institutes. These institutes were sponsored by I/D/E/A, the educational innovations division of the Charles F. Kettering Foundation. Institutes were held at Mills College, Oakland, California; College of Southern Utah, Cedar City, Utah; Davidson College, Davidson, North Carolina; and Amherst College, Amherst, Massachusetts.

The theme of the program, "How to Enhance Individuality in Learning", took its name from an international seminar held in Ditchley Park, Oxfordshire, England sponsored by I/D/E/A and the National Association of Secondary School Principals, in the fall of 1967.

Purposes of these institutes were, (1) to bring to the participants attention the various innovations existant that enhance learning, (2) to involve the Fellows in active dialogue dealing with ways to enhance individuality in learning, and (3) to acquire additional information from a broad discussion of this significant topic which will be made available after the seminar to all of the Fellows. (47:1) A detailed listing of topics, presenters, and time schedules are given in Appendix E. All Fellows in these groups of conferences had their transportation paid and accrued no expenses while attending.

The third workshop to be evaluated, dealt with Flexible Scheduling, and was sponsored by the University of Massachusetts, School of Education. This conference, conducted by Dean Dwight W. Allen, had as its objectives:
"The participants will gain awareness of and skill to utilize (1) new basic designs for the school curriculum, (2) procedures for constructing modular schedules, (3) the preparation of input data for presentation to high speed computers for generation of master schedules, (4) many and varied educational innovations feasible under modular schedules, and (5) output data from the computer." (113:1)

This conference was held at the University of Massachusetts from July 8 to 12, 1968, and had 400 participants. These participants differ from the I/D/E/A participants in the fact that they paid a fee to attend. A detailed listing of topics, presenters, and time schedules are given in Appendix F.

All participants of the I/D/E/A conferences of 1968 and University of Massachusetts workshop of 1968 were given a pre-conference and terminal conference inventory. They were sent a six months follow-up inventory in January, 1969. The participants of the I/D/E/A Hawaiian conference in 1967 were followed up with an inventory six months after that conference took place. In addition, the participants of this conference were polled at the end of the conference, and the results of this evaluation appear in a study done for the United States Office of Education by Richard I. Miller (79). Briefly, this study found that 88% of the participants perceived the conference as having introduced them to new ideas about research, methods, and technology that were relevant to the solution of educational needs.
Objectives

The purpose of this study is to determine influences of selected week long summer training programs upon the perceptions of selected program participants. Specific objectives include the determination of the following:

1. The relationship between attendance at a program and the ability of the participants to identify the program as a source of information about educational innovations of interest. (I/D/E/A institutes, 1967 and 1968 and University of Massachusetts, 1968, measured after six months)

2. The relationship between attendance at a program and the ability of participants to identify the program as a source of information contributing to the adoption of innovations. (I/D/E/A institutes, 1967 and 1968 and University of Massachusetts, 1968, measured after six months)

3. The relationship between source of support for program attendance and the participants ability to identify the program as a source of information about educational innovations of interest. (I/D/E/A institutes, 1968 and University of Massachusetts, 1968, measured after six months)

4. The relationship between source of support for program attendance and the participants ability to identify the program as a source of information contributing to the adoption of innovations. (I/D/E/A institutes, 1968 and University of Massachusetts, 1968, measured after six months)

5. The relationship between subject matter of programs offered and subject matter of innovations of interest to program participants. (I/D/E/A institutes, 1967 and 1968, and University of Massachusetts, 1968, measured after six months)


7. The relationship between subjects perceptual assessment of the worth of programs and recognition of programs as
a source of information about educational innovations of interest. (I/D/E/A institutes, 1968, and University of Massachusetts, 1968, measured after six months)

8. The relationship between subjects perceptual assessment of the worth of programs and recognition of programs as a source of information contributing to the adoption of innovations. (I/D/E/A institutes, 1968, and University of Massachusetts, 1968, measured after six months)

Variables

1. Independent Variables

The independent variables are (1) exposure to innovative practices, products, and ideas, at a week long summer conference concerned with educational innovation, and (2) different modes of support for participants at the conferences.

2. Dependent Variables

Responses on Pre-Conference and Terminal Conference inventories and a six month follow-up inventory constructed by the investigator.

Hypotheses

In light of the objectives mentioned previously, the following hypotheses will be tested:

1. A minimum of one in ten participants, after six months, will perceive the summer program as a source of information about educational innovations of interest. *

2. A minimum of one in twenty participants will perceive the summer program as a source of information contributing to the adoption of innovations. *

3. A minimum of one in ten participants who paid their way to a summer program will perceive the program as a source of information about educational innovations of interest.
A minimum of one in ten participants who received stipends to attend a summer program will perceive the program as a source of information about educational innovations of interest.

4. A minimum of one in twenty participants who paid their way to a summer program will perceive the program as a source of information contributing to the adoption of innovations.

A minimum of one in ten participants who received stipends to attend a summer program will perceive the program as a source of information contributing to the adoption of innovations.

5. A minimum of one time in ten, the subject matter of innovations perceived, after six months, as being of interest to the participants will be subject matter which was offered at the program.

6. A minimum of one time in twenty, innovations that are perceived by participants as having been adopted six months after the conference and that are in addition to those perceived as having been adopted prior to the program will relate to the subject matter of innovations offered at the program.

7. A minimum of one participant in ten who indicate on a terminal conference inventory that the conference heightened their aspirations to innovate, will, after six months, perceive the summer program as a source of information about educational innovations of interest.

8. A minimum of one participant in twenty who indicate on a terminal conference inventory that the conference heightened their aspirations to innovate, will after six months, perceive the summer programs as a source of information contributing to the adoption of innovations.

* The figure one in ten is chosen because of the findings of James B. Heck in a study of innovations in Ohio schools. (37) He found "the overriding source of ideas for new instructional programs was the local school, which was indicated by three-fourths of the programs. Universities, the state department of education, and private foundations, taken together accounted for less than 10% of the sources of ideas." (37:108)
Heck studied six other innovations and noted where the school district got its ideas about them. In all six cases more than 90% of the sources of ideas were the local district. There was almost a total lack of influence in this area by private foundations, professional organizations, and nearby schools. (p. 186)

With less than 10% of the ideas coming from universities, state departments of education and private foundations, it is not unreasonable to judge ten percent of the sample recognizing the summer programs as sources of information about innovations, as a valid cutting point.

* The figure one in twenty was used because of the findings of Elihu Katz (44), and Ryan and Gross (97, 98). Katz found that two-thirds of the doctors polled had heard of a drug called Gammanyn four months after it was issued, but only one-third had prescribed it. To make one aware of something is easier than "legitimizing" the use of it.

Ryan and Gross, in their classic study on the diffusion of hybrid corn, found that "by 1934, 90% of the farmers had heard of the new seed, but only 20% had tried it by then". (97:76) They concluded that the diffusion of information and the diffusion of adoption were quite distinguishable from one another. Ryan and Gross's figures and the figures of Katz show that it is approximately twice as hard to legitimate adoption as it is make a person aware, hence the figure one in twenty.

Significance of the Problem

This problem is important because short term summer training programs are the main vehicle used in in-service education today. Many mil-
lions of dollars are spent each year for workshops, seminars, conferences and institutes. Indeed, as of 1965 the National Science Foundation alone, had 146,000 participants in its workshops. (82) The number is considerably higher today. Any endeavor that plays such a major role in in-service educational plans, and on which so much money is spent deserves further evaluation.

Most evaluations of short term summer training programs consist of either a measurement of subject acquired during the program or an assessment of how the participants felt about the conference. This study is an attempt to evaluate training programs in regard to their effectiveness as a source of ideas, and as a source for legitimatizing decisions to adopt these ideas.

The investigation is significant because it will add to the knowledge about sources of ideas, and adoption of innovations in education, and to date there is a paucity of knowledge in this area.

The investigation is also significant because it provides an opportunity for I/D/E/A, and other groups who would conduct workshops to utilize the findings of this study to revise, and strengthen summer programs contemplated in the future. It is also an opportunity for substantiation. Perhaps these programs will be evaluated as quite effective mechanisms for change, which will undoubtedly please the sponsors. Summer programs are a significant part of the educational enterprise, significant enough a part to make an evaluation of them a valid endeavor.
Limitations of the Study

1. The study does not concern itself with the worth of the innovations adopted, or the number of people affected by their adoption.

2. Resistance to innovation, or lack of it, is not controlled. Some districts or individuals are highly innovative, and need little convincing of the worth of innovating. Others are just the opposite. Also, a person "converted" by the programs could go back to a very traditional school system and meet resistance to change at every turn, and be ineffective.

3. Comparisons made on the paid -- not paid variable (hypotheses three and four), could be open to some debate. First because the I/D/E/A institutes were more selective in choosing participants than the University of Massachusetts workshop, and second because people who are paid to attend might feel an obligation to evaluate the conference favorably, where those who paid their own way could afford to be more candid. This obligation effect is not applicable on the six months follow-up, however, for the follow-up does not mention any conference attended, and the participant can in no way link the inventory with the conference except by independently perceiving the program as a source of information.

4. The low returns on the pre-conference and terminal conference inventories for the University of Massachusetts workshop, are a limitation. It was considerably less well organized than the I/D/E/A institutes, and the evaluators paid little attention to providing time for the participants to fill out the inventories. The low N could skew the results of the statistical analyses of the data.
CHAPTER II
RELATED RESEARCH

Introduction

This chapter reviews the literature in the two main areas with which the study is concerned. These two areas are: research on short term training programs, institutes, workshops, conferences, or seminars; and a selected group of research studies in the field of innovation and change.

The review of short term training research is included because the present evaluation studies the effectiveness of six short term training programs and it is pertinent to include research in this area.

The second area of concentration consists of selected studies done in the area of innovation and change. This area is included because the training programs being evaluated dealt with educational innovation, and they are being analyzed in regard to their effectiveness as sources of information about educational innovations, and as sources of information leading to the adoption of innovations. With the above in mind this section of the pertinent research was divided into four areas: (1) Research dealing with sources of information and their influence on legitimating decisions to adopt innovations, (2) Research on the diffusion of innovations, (3) Research on the adoption of innovations, and (4) Research dealing with change agents and change mechanisms. Most of the research cited in this section has been done in the areas of medicine, industry, voter opinion, or rural sociology, with heavy emphasis on the latter. The field of education is practically barren when it comes to
studies done in regard to educational change, hence the reliance on other areas for viable research results.

Educational research in this area of educational change is so lacking, and diffusion and adoption of innovations so sporadic, it has led Miles (39) to generalize why the whole area of educational innovation is so unsophisticated. It is because of: (1) the lack of valid research findings, (2) the absence of change agents to promote new educational ideas, and (3) the lack of economic incentive to adopt innovations. This study is an attempt to determine the effectiveness of short term training programs as a change agent (#2), and to add to the valid research findings in the area (#1).

Rural Sociology is cited most frequently because of the incomparable research tradition it has built up over the years. Rural sociologists have been systematically studying change for almost thirty years. The strategies for change generated by this research have allowed the rural sociologists to construct the most effective system for rationally and systematically bringing about viable change.

There are, however, some authorities who point out that the findings of studies in other fields are not directly generalizable to education. One such authority, Guba (31) argues:

1. In most reported research the change or innovation in question is accepted or rejected by an individual entrepreneur (e.g., farmer or physician); in education we are concerned about acceptance by an agent of a bureaucratic social system.

2. Decisions for change that have been studied are typically individual or family decisions; in education we are concerned with collective social decisions.

3. Sources of information about innovations in many study
areas are well institutionalized (e.g., agricultural extension); this is not true in education.

4. Most innovations in other fields are based on research evidence and are thoroughly tested before being made generally available (e.g., through the agricultural experiment station); this is not true in education.

5. Most innovations in other areas are diffused through institutionalized change agents (e.g., the county agricultural or home extension agent); few institutionalized change agents exist in education.

6. The incentive for the adoption of most studied innovations is economic (e.g., more bushels per acre); the economic motive, while not eliminated in education, is replaced to a certain degree by a social motive.

As a result of the foregoing, change in education is not planned, evaluated, or diffused through institutionalized channels. It is rather a confusion of poorly defined, slowly diffused, dubiously motivated, and rarely evaluated strategies.

The process of change, and the effectiveness of programs used as change agents in education need to be extensively studied and it is felt that this investigation illuminates somewhat more this crucial area for public education.

**Studies on Short Term Training Programs**

Studies included in this section cover evaluations of the broad spectrum of all in-service procedures including, workshops, institutes, conferences, seminars, etc.

Workshops, although not a new concept, were given added impetus by the Eight-Year-Study of the Commission on the Relation of School and College of the Progressive Education Association. (1933-1941) Accord-
ing to Heaton et al. (36), they were suggested for more extensive use by Ralph Tyler and Robert Havinghurst. The advice of these men was heeded, for the first workshop under the auspices of the Progressive Education Association was held in the summer of 1936, at the Ohio State University. Because of the support of the Progressive Education Association and other reasons, the short term training program approach has become today the largest most common form of in-service training in American education. Many follow-ups and evaluations of these programs have taken place. The following summaries are illustrative of the types carried out.

Heaton, Camp, and Diedrich (36) followed up participants of a 1939 Progressive Education Association workshop held at the Ohio State University. A randomly selected sample of one-fifth of the participants filled out a checklist and were personally interviewed in order to determine outcomes of the training program. Of the participants polled, 85% had changed course structures, 80% used more democratic teaching methods, 50% were more candidly evaluating their teaching, 68% had renewed interest and faith in education, and 65% expressed having a greater satisfaction in their work.

Otto et al. (86) evaluated four community workshops held at the University of Michigan in 1941. Using diaries kept on a daily basis by participants, and the results of a follow-up letter sent to participants he found that the majority of participants, (1) used new curricular units, (2) were more satisfied with their jobs, (3) had worked on improving community relations, and (4) used evaluative techniques they had not used before to assess the quality of their teaching.
In order to detect the effectiveness of workshop programs held at the Ohio State University between 1944 and 1947, Henderson (36), evaluated selected programs held at that institution. Using questionnaires and an inventory titled "Attitudes Toward Teaching", she polled 338 teachers, and fifty-five school principals. She found that the "workshops contributed significantly to improvement in attitude in respect to basic understandings concerning democratic teaching" (36:283). Unfortunately, she also had to report that, "the workshop activities had not resulted in any change in behavior" (36:285).

An extensive evaluation of a series of workshops was carried out by Kelley (1951). After gathering large quantities of data, he made no attempt to systematically study them. He felt that the success of a workshop is determined by the attitudes of participants, and as these were "subjective", (1948:104) they need not be pursued.

O'Rourke (46) evaluated a workshop held in Massachusetts. Choosing six variables (e.g., administrative or supervisory accomplishments, curricular practices, teacher-learning environments, etc.) she measured 261 teachers on these variables with a questionnaire. She found that the participants had improved on all six variables, when compared with a control group.

Not all studies found substantive results. In a loosely constructed study, Mills' (80) most profound finding was that "some teachers reported they had gained courage to try new ideas" (80). In the same context of attitudinal change, Mitchell (81) found that "motivation was one of the major advantages of the workshop as an in-service procedure", (81), when a large percent of the group studied stated that workshops awaken
new interests and deeper understandings of old ones. Another study done that substantiates these findings was one done by Decosta et al. (21). They found, in reviewing evaluation sheets filled out by participants, that frequent references were made to the inspiration which they felt they had gained and the general benefits they felt would come to others from their efforts.

Large city school districts have initiated massive workshop programs as the principal mode of in-service education for their teachers. Examples of these are the Detroit, Michigan, and Philadelphia, Pennsylvania programs. As of 1962 there had been 380 workshops held in the Detroit school system with little evaluation of them. Some evaluations have taken place, however. Marburger, (71) in an evaluation of a Detroit workshop, concerned with the disadvantaged, found that "attitudes of participants toward the disadvantaged were enhanced as a result of their in-service experiences" (71).

More sophisticated attempts at evaluation have been done. Gruber (28) studied nine academic year institutes offered at the University of Colorado in the years 1958 and 1959. His was an honest effort to find if Fellows enrolled approached science teaching as a set of established facts and doctrines, or as a way of thought.

One of the main objectives of the institutes was to have trainees view science teaching as a way of thought. His findings and recommendations for future institutes are quite illuminating. He found that "at the end of the training year, only 25% of the Fellows were rated strong in their concern for teaching science as a way of thought, and over 60% showed negligible interest in this aspect of science" (28:111).
As a means of overcoming this lack of effectiveness, Gruber recommends more leisurely discussion on the part of participants because "the number of hours devoted to academic work per week was negatively correlated with the criterion variable, (good lesson plans) suggesting that a certain amount of leisure for thoughtful discussion of the meaning of science was more important than a large amount of academic busy-work" (28:111). His only recourse from this finding was to recommend "that training programs stressing active participation by the Fellows, may lead to an approach to science teaching in which science is treated as a way of thought". (28:112)

Gruber et al. (29) evaluated another Academic Year Institute in 1959, in which they found that it "failed to transmit attitudes and information relevant to teaching science, not only as a body of knowledge, but as a way of thinking". (29:27)

Stevenson (101) in his study of the Academic Year Institute at the Ohio State University, attempted to measure the nature of the changes which occurred in the participating teachers, the nature of the changes which occurred in the school systems to which they returned, and the extent to which the changes were attributable to the Academic Year Institute. Using a questionnaire on both participants and their immediate supervisors, he found that participants signed up for more professional courses than their colleagues, their supervisors said that participants were better teachers because of their experience, participants had to a considerable extent changed their teaching methods, and that they influenced their colleagues in a constructive manner.

Another evaluation of an institute at the University of Wisconsin
was undertaken by Heidman (38). His study took place three years after the program took place. He followed up participants with questionnaires and interviews, and found that participants had: (1) Profited by their training, (2) improved their professional attitude, (3) increased their confidence and security, (4) increased their occupational mobility, (5) removed academic deficiencies, and (6) modernized their teaching methods and concepts.

The impact of the National Science Foundation on high schools was pointed out by Ronald F. Campbell and Robert A. Bunnell (16). They studied National Science Foundation regular term and summer institutes as influences on the high schools of Illinois in terms of two variables, socioeconomic level, and location of the school community. By sending a questionnaire to all superintendents of schools in Illinois, he found that those communities with populations classified as having high socioeconomic levels had: (1) greater participation by science teachers in National Science Foundation programs, (2) more course offerings, and (3) displayed greater awareness of latest curricular changes. They also found that: (1) suburban schools had the highest participation of teachers in National Science Foundation programs, (2) they also had the highest number of curricular changes taking place, and (3) urban schools ranked highest in the number of courses added just prior to the study.

Ivor (41) completed a study of National Science Foundation participants under the auspices of Social Science Research Incorporated. A cooperative research project, United States Office of Education Series was reported by Gerber (27) regarding a 1962 institute in English. In both these projects a positive effect on participants was found to be
evident. The impact varied from the general "just made me a better teacher", to the more specific "acquired up-dated subject matter".

In order to determine the impact of National Defense Education Act, Title III in-service programs, Johnson (39) conducted a comprehensive study of all such programs for the California State Department of Education. When asked to judge the importance of eight factors considered significant in affecting the quality of teachers, administrators ranked National Defense Education Act programs second only to "quality of preparation". Johnson also found that because of Title III, "five out of six administrators felt that the teachers in the schools were significantly more effective as directors of classroom instruction". (39) After analyzing his data, Johnson was led to conclude that "these institutes have been the greatest impetus for change in the history of education". (39:175)

In another evaluation of Title III programs, Marshall (74) in his study at Indiana University attempted to determine what changes in science education in the public schools of Indiana had been effected by the local school district's Title III science programs. He found that: (1) participants and their supervisors were enthusiastic about benefits received from the training, (2) knowledge and techniques gained in the institute training might have been a factor in the participants taking on responsibilities and duties in the local Title III programs, and (3) more communication was needed between science teachers and the state Title III office.

A 1962 Michigan workshop for Language Arts teachers was evaluated by Karbal (42). His method of inquiry included sending questionnaires
to, and holding personal interviews with, all thirty-seven participants. He found that because of the workshop experience, "most teachers were anxious to do something definite in the schools". (42) He also found that the majority of the administrators and immediate superiors of the participants thought them better teachers, more active, and more anxious to participate.

Similar findings were reported by Petrongolo (88) in a study that evaluated participants who had attended National Science Foundation summer institutes from 1961 to 1966. Using a questionnaire and a Director's report as data sources, he analyzed returns from 227 participants. Teachers considered it "worthwhile", and a "big help". Teachers also thought that they: (1) grew intellectually, (2) used knowledge gained at the institute in their teaching, (3) changed their teaching procedures, and (4) were better teachers.

A more sophisticated analysis was done by personnel from the Center for Instructional Research and Curriculum Evaluation on the 1966 American Educational Research Association pre-session on experimental design (100). Using various data gathering devices and achievement tests, the investigators found, among other things, a substantial gain in knowledge about design and analysis. They found also that there was little change in participants attitudes toward research activities.

Perceptions of behavioral changes effected by a training program in human relations held at Michigan State University in 1966 were studied by Krafft (50). He found that training participants indicated a highly significant perceived behavioral change as they functioned on-the-job, six months following the workshop.
Bradberry (13) followed up participants of National Science Foundation Institutes held at six southeastern universities between 1959 and 1961. Using a questionnaire as a data gathering device, she concluded that: (1) 71% of the participants had revised course content, (2) 80% had varied their teaching presentations, and (3) 72% were using the problem-solving method in their teaching. In sum, she found the conferences most beneficial.

In a study done at the same institution, Hand (33) evaluated a mathematics institute which was basically a comparison of the mathematics achievement of participants as compared to a control group of non-attending teachers, and a comparison of the mathematics achievement of the students of the two above mentioned groups. In both cases the participant and his students scored significantly higher than their control groups in mathematics achievement.

Two other less rigorous studies have been done recently in the Southeast. Irby (40), and Rasmussen (91) both evaluated institute programs that were held at the University of Mississippi, and the University of Georgia, respectively. Both used questionnaires, and both found the effects of the programs worthwhile and beneficial.

The most rigorous evaluation of an institute has been done by Wilson (112). He analyzed data gathered from participants of a seven week institute held for teachers of the disadvantaged. Using a validated questionnaire titled "Your Perceptions of the Disadvantaged", and highly sophisticated analysis of covariance statistical techniques, he found, "there were significant differences (p. = .001) between the experimental and control groups in regard to their perceptions of the disadvan-
taged" (112:115). A recommendation generated by this study was that other studies be done on the influence of institutes and in-service programs on the perceptions of their participants.

A further study of an institute for teachers of the disadvantaged was done by Fischle (24). Evaluating a 1966 institute held at Ball State College, and using the Minnesota Teacher Attitude Inventory, and the Personal Orientation Inventory as instrumentation, she determined significant differences (p. = .01) in teachers attitudes toward the disadvantaged when pre-conference scores were compared to post-conference scores. Practice effect was not considered when analyzing the data.

The periodical literature abounds with accounts of workshops, institutes, conferences, and anything remotely related to short term, in-service, training programs. They are largely descriptive in form, and do not take the form of an attempt at evaluation. Examples of this include articles by Smith (99), and MacDonald (69). A long accounting of such literature has been purposely omitted because, it is, irrelevant to this study since they failed to seriously attempt evaluation. Typical findings include "teachers thought the experience worthwhile", "the project staff was much pleased with the outcomes of the conference", etc.

Some useful periodical literature does exist, however, in respect to establishing guidelines for further training programs. Taba's (103) recommendations of suitable guidelines for future workshops, are quite pertinent and perceptive, typical of all her work.
Summary

Studies of short term training programs take basically three forms. Many larger studies and most periodical literature on training programs take the form of descriptive accounts of what transpired at the program. Little, if any, effort is made to be at all rigorous in regard to evaluation of the program outcomes.

A second form of training program evaluation is where the investigator measures acquisition of subject matter by the conference participants. These studies universally show very impressive results. The findings of this type study usually show "substantial gains", "significant increases", etc. This grouping of study types might be misleading, however, for some studies do make an honest attempt to correlate subject matter acquisition with other variables but usually with little success.

A third group of training program evaluations are ones that measure participants, and sometimes their administrators, opinions on the worth of the program. Results normally take the form of large percentages of the sample, saying they have changed teaching methods, added new presentations, or are "better" teachers for having attended. Very little effort has been taken to actually measure performance of the participants, rather, results rely primarily on the opinions of participants' and/or their immediate superiors.

Taken as a whole, the evaluations of short term training programs, contain all the inadequacies that plaque much of educational research. In many studies little, if any, effort is made to randomize, control intervening variables, and control for practice effect, maturation, or regression to the mean. This is not to fault all of them, and to say that
this study is free from such flaws, for it is not. Educational research has to be a compromise between what "should be" and what "is". Variables intervene, effects are ever present, hence most educational research findings would be questioned by the strict empiricist or laboratory researcher. Recognizing that at best any study on this topic can only control one or two variables without distorting the very nature of that which it seeks to examine, this study is only intended to be the beginning of the effort to be able to accumulatively assess the values of programs.

With this in mind this investigation will provide "clean" results on only one aspect of a many faceted problem, in hopes that it will initiate further accumulation of research results. No effort is made to measure acquisition of subject matter; and opinions of participants on the worth of the program play a less crucial role than their ability to identify the program as a source of information about innovations they know of, and as a source of information leading to the adoption of innovations.

In this latter respect, this investigation somewhat resembles studies done in other fields (e.g., agriculture, medicine) which attempted to determine the most influential information sources for awareness of innovations, and for legitimating decisions to adopt innovations. With this in mind a review of literature pertaining to: sources of information, legitimation of decisions to adopt, diffusion of innovations, adoption of innovations, and change agents and mechanisms will now be given.
Studies on Innovation and Change

Studies reviewed here will be primarily from areas other than education, (e.g., industry, rural sociology) because of the aforementioned paucity of research done in this area that pertains to the educational enterprise.

Research on Idea Sources and Their Effectiveness in Legitimating Decisions to Adopt Innovations.

The first area to be considered is the research conducted that pertains to sources of information as they make people aware of new ideas, and as sources of information that attempt to legitimate people's decisions to adopt new ideas. This dichotomy is used because of Ryan and Gross's (98) findings that "the spread of knowledge and the spread of conviction are, analytically at least, distinct processes". (98) In further summarizing their findings in the same study, they were led to conclude that "in general it has been found that mass media serve to inform and that personal contacts are used to legitimate". (98:78)

The findings of Ryan and Gross are based on information gained in their classic 1943 study on hybrid seed corn. The table on page 29 is self-explanatory: (97:682).

The area of information sources has been studied quite thoroughly in other fields also. Katz, (44) in a study of the diffusion of a new drug, found that "two-thirds of the doctors had heard of Gammamyn by four months of issuance, yet only one-third had used it". (44:76) In further analyzing information sources related to the drug, he found that only 10% of the doctors reported adoption of Gammamyn after hearing
Table 2

Original Sources of Knowledge of Hybrid Seed and Most Influential Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Farmers Crediting Source with:</th>
<th>Original Knowledge</th>
<th>Most Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salesmen</td>
<td></td>
<td>49</td>
<td>32</td>
</tr>
<tr>
<td>Neighbors and Relatives</td>
<td></td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>Farm Journals</td>
<td></td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Radio Advertising</td>
<td></td>
<td>10</td>
<td>--</td>
</tr>
<tr>
<td>Extension Service</td>
<td></td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>All other media</td>
<td></td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Total Farmers = 257</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
about it from the first source of awareness. Three or four sources were needed before the majority adopted it. Katz in his summary concludes that "it seems reasonable to conclude that the availability of information that an innovation exists is not enough to make for its adoption". (44:76)

Herbert Lionberger, a rural sociologist, has chosen to study the area of information sources throughout his academic career. His book (53) contains generalizations that he has gleaned from over 100 studies done that deal with change in the field of rural sociology.

He has found that people normally do not adopt a new practice or idea as soon as they hear about it. (53:3) People appear to go through a series of distinguishable stages when deciding to adopt innovations.

1. Awareness -- the first knowledge of an idea.

2. Interest -- the active seeking of information about the idea.

3. Evaluation -- weighing and sifting the acquired information.

4. Trial -- the tentative trying out of the idea, accompanied by acquisition of information on how to implement it.

5. Adoption -- the full-scale integration of the practice into the on-going operation.

Lionberger has also found (53) that information sources vary in their functions at each of these stages of the adoption process. Table 3 will include the stages, the information sources most influential at each stage, and in parentheses bibliographical entry numbers of studies that have found similar results. (53)
Table 3
Most Influential Information Source by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Mass media (6, 7, 9, 10, 19, 26, 61)</td>
</tr>
<tr>
<td>Interest</td>
<td>Mass media and other farmers (7, 10, 19, 26, 61)</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Well regarded farmers and &quot;local influencers&quot;</td>
</tr>
<tr>
<td></td>
<td>(8, 96, 6, 9, 10, 19)</td>
</tr>
<tr>
<td>Trial</td>
<td>Salesmen - other farmers - county agent (8, 96,</td>
</tr>
<tr>
<td></td>
<td>6, 9, 10, 19)</td>
</tr>
<tr>
<td>Adoption</td>
<td>Peers (9, 96, 19)</td>
</tr>
</tbody>
</table>

Lionberger has offered other generalizations in regard to information sources: (53:6)

1. Information sources should be used selectively.
2. Information sources are adaptable.
3. Individuals are important information sources.
4. Individuals sought for advice are more competent than those who aren't.
5. Individuals sought for advice are more exposed to direct information sources.
6. Some individuals are more "influential" in decisions to adopt.
7. Influentials and innovators are not always the same person.
8. Persons sought for advice frequently have higher status than the seekers.

Many of the generalizations in Lionberger's book in regard to sources of information have been generated by his own research. Using interviews as his exclusive means of gathering data, he has rigorously
researched this field. In a study on farmers contacts with sources of information, (55) he found that impersonal means were the most influential source of awareness of new ideas. In a similar study, (56) he found that most farmers recognized more impersonal than personal source of information at the awareness level. He has studied characteristics of farm operators sought as information sources, (59) and found them more educated and more open to direct sources of information. In an extension of the 1953 study, he rated operators sought as information sources on a prestige scale, (62) and found them to have significantly higher prestige ratings than the seekers. In an attempt to determine the locus of the legitimation function in decisions to adopt (64) he found that fellow farmers were the most potent legitimators of decisions. Finally, he has studied the extent to which innovation, communication, and legitimation functions were performed by the same or different people. (65) Characteristics of each category were determined, and multiple functionaries were discovered. The most common such role being communicator-legitimator. Justice cannot be done to the pioneering research of this man in a review such as this. Let it suffice to say much research done today stands on Lionberger's shoulders.

Copp, Sill and Brown (19) offer a five-fold explanation for differences in functions of informational sources in the diffusion process:

1. Institutionalization of information sources,
2. The temporal sequence of information sources,
3. The possibility of negative recommendations,
4. Scheduling limitations of the sources, and
5. The need for local legitimation.
Lionberger, (53) adds two explanations to theirs, namely; (6) Individual perception of the sources as means of obtaining farm information, and (7) the need for two-way communication at the evaluation or decision-making stages of the individual adoption process.

Wilkening (110) has likewise studied the function of information sources at different stages of the adoption process. His findings are summarized in Table 4. (110:363)

**Table 4**

Functions and Roles of Four Types of Communicating Agents

<table>
<thead>
<tr>
<th>Type of Communicating Agent</th>
<th>Major Functions</th>
<th>Major Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Media</td>
<td>A. Providing Information</td>
<td>First Knowledge</td>
</tr>
<tr>
<td></td>
<td>B. Selling, Advertising</td>
<td></td>
</tr>
<tr>
<td>Other Farmers</td>
<td>A. Social Status</td>
<td>A. Help in decision-making</td>
</tr>
<tr>
<td></td>
<td>B. Solidarity</td>
<td>B. Instruction in implementing change</td>
</tr>
<tr>
<td></td>
<td>C. Mutual Aid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D. Response</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E. Recreation</td>
<td></td>
</tr>
<tr>
<td>Agricultural Agencies</td>
<td>A. Disseminating information</td>
<td>A. Instruction in putting change into effect</td>
</tr>
<tr>
<td></td>
<td>B. Teaching basic principles of farming</td>
<td>B. Help in decision-making</td>
</tr>
<tr>
<td></td>
<td>C. Providing special and technical services</td>
<td></td>
</tr>
<tr>
<td>Commercial Sources</td>
<td>A. Buying and selling materials and equipment</td>
<td>A. Instruction in putting change into effect</td>
</tr>
<tr>
<td></td>
<td>B. Professional Services</td>
<td>B. First Knowledge</td>
</tr>
</tbody>
</table>
Watson and Glaser (107) have suggested many considerations important to implementation of organizational change. Among the many proposed, is one suggestion that other organizations and agencies outside the one being changed be used as resources of ideas and inventions.

In one of the infrequent studies in education that considers sources of information of innovations, Heck (37) found that the overriding source of ideas for new instructional programs was the local school, which was identified by three-fourths of the programs. While the district or County Superintendents Office was the second most frequently selected, only one-fifth of the programs chose this as a source of ideas. Universities, the State Department of Education, and private foundations, taken together accounted for approximately 10% of the sources of ideas. Thus, their impact was negligible. (37:108)

Table 5
Source of Ideas for Instructional Programs*

<table>
<thead>
<tr>
<th>Idea Source</th>
<th>Percentage of N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local School</td>
<td>74.3</td>
</tr>
<tr>
<td>County Superintendent</td>
<td>21.4</td>
</tr>
<tr>
<td>Universities</td>
<td>1.3</td>
</tr>
<tr>
<td>Nearby Schools</td>
<td>5.8</td>
</tr>
<tr>
<td>State Department of Education</td>
<td>5.5</td>
</tr>
<tr>
<td>Professional Literature</td>
<td>3.0</td>
</tr>
<tr>
<td>Private Foundations</td>
<td>4.0</td>
</tr>
</tbody>
</table>

* There were multiple answers which explains total percent being over 100%.
Heck studied six other innovations and tallied the school districts' sources of information about them. In all six cases more than 90% of the sources of ideas were the local school district or the county superintendent. There was almost a total lack of influence in this area by private foundations, school study councils, parents organizations, nearby schools, and professional organizations.

A difficulty presented by these data is that questions on information sources were vaguely worded and did not identify rigorously the antecedents of the ideas which were contributed by local school staff members. Thus, except by implication, it is extremely difficult to suggest any reliable conclusions as to the initial source of idea inputs.

With Heck, idea input was a side issue, in this study it is the main issue. This study will yield data on sources of ideas about educational innovations that traces the antecedents of new programs in the local schools. In this way, a start will have been made on establishing a broad base of empirical knowledge upon which future research can be based. By doing so the "shot in the dark" approach to this field of inquiry will be on its way toward elimination.

Research on the Diffusion of Innovations.

This section of the review of pertinent literature deals with the diffusion of innovations. A review of this literature is inherently a part of a study that attempts to trace the antecedents of ideas, and test the effectiveness of a vehicle for dissemination of those ideas. We are, in effect, in this study attempting to determine the effectiveness of short term training programs as vehicles for diffusing or dis-
seminating knowledge of innovations, and their effectiveness in diffusing or disseminating information that leads to the adoption of innovations.

The diffusion of innovation has been referred to be Katz (44) as one of the major approaches to social and technical change. Diffusion, as defined by him is (1) acceptance, (2) over time, (3) of some specific item, idea, or practice, (4) by individuals, groups, or other adopting units, linked to (5) specific channels of communication, (6) to a social structure, and (7) to a given system of values or culture. Item number five in Katz's sequence is where this investigation most closely fits in regard to its major emphasis.

Diffusion research, thus is concerned with sources of information about new practices, a description of patterns of new ways of doing things, and the impact of such ideas on social systems or individuals.

Much of the research that has been accumulated in this area has been done in the fields of rural sociology and mass communication. Good examples of this research is work done by Rogers (95) and Katz (43). Rural sociology is the most productive field to find research done on the diffusion process. No other field has so carefully identified and classified the elements of the diffusion process. As a result most questions in this regard must be directed to the findings of research in rural sociology with reference to other fields where possible. Education, regrettfully, has no research tradition in this area to rest upon. This study will start the accumulation of knowledge in this area for education, and form the basis for further inquiry.

Rural sociologists have classified diffusion research under four
major categories which for the most part exemplify their findings:

1. The differential acceptance of farm practices as a function of status, role, and motivation;

2. The differential acceptance of farm practices as a function of socio-economic systems;

3. Diffusion as the study of the rate of cultural change;

4. Diffusion as a problem of communication of information.

Research in agriculture has been classified by Lionberger in a book by Meierhenry (75), into eight categories, which have been helpful in research on the diffusion of new agricultural practices. They include:

1. Personal characteristics of the acceptor.

2. The acceptor's position in the social and communicative structure.

3. Identification with membership in various types of formal, locality, kinship, reference, clique groups, and clique-like social arrangements.

4. Group norms, relative to the acceptance of the changes.

5. Inherent characteristics of the change itself.

6. Exposure to various types of mass media, sources of information, the mediating influence of people, such as individuals, in-groups, and the flow of information through interpersonal communicative networks.

7. Situational factors relating to the farming unit.

8. The role of change agents in the adoptive process.

Diffusion rates in education are much slower than in industrial, agricultural, or medical systems. Miles' (39) reasons as to why this is so have been mentioned in a previous section. (see page 16)

Recent statements by Rogers (94), Clark and Guba (17), Abbott (1) and Crane (20) suggest several other impediments to the diffusion of
innovation in large educational organizations. These include: (1) innovations seldom have high relative advantage, thus making the consequences difficult to evaluate; (2) innovation decisions are collective in large organizations and, hence face many institutional and individual interest barriers; (3) administrative officials often appropriate what Heck (37) calls "hierarchical prerogatives" to enhance their personal status; and (4) innovations are accepted or rejected without a clear view and statement of the location of the target system and insight into the power matrix in which it is imbedded.

Because of these impediments, several writers have suggested various ways of alleviating some of the problems of instituting change in educational organizations. Rogers (94) has proposed several ways of doing this. He suggests: (1) having small scale trials of innovations that have a clear-cut relative advantage, (2) establishing an organization to conduct self analysis, thus lending to self-renewal and further innovation, and (3) creating a means for accurately and quickly informing educational leadership of the need for and successes of innovation and change.

A writer could list interminably the studies done in rural sociology under the frames of reference reported. This investigator has chosen not to do so for the extent and types of research done have been explained and suffices to give the reader a perspective on diffusion research.

A study on diffusion has been done in education. Richland (93) reports on the impact of a traveling seminar or educational change designed to shorten the time between the invention of an educational innovation and its widespread use in education. He suggests that the
field extension service concept (patterned after agricultural extension agents and their use of practicing farmers as illustrations of innovation) proved effective for stimulating educational innovation. Additionally, he states that a threat to the status of administrative officials in educational organizations may be a serious obstacle to the introduction of innovation.

As a conclusion to the section on diffusion research, the reader is directed to a concept of diffusion called the "two-way" or "multi-step" flow of communication. Proposed by Katz (45), and Lionberger (53), among others, it is best explained by the following schema. Media $\rightarrow$ Influential $\rightarrow$ Other Person. Basically, it states that an influential person, group, or legitimating agent is required to diffuse knowledge and adoption. This influential acts as an "intermediary" or "middle man" in the diffusion process. This investigation could be considered an attempt to determine how effectively training programs fill this "middle" role in the educational diffusion process.

Research on the Adoption of Innovations.

Research on the adoption of innovations is found primarily in the fields of rural sociology and medicine. Lionberger's (53) adoption sequence, (awareness, interest, evaluation, trial, adoption) that applies to decisions to adopt agriculture, has been discussed, and explained on page 30.

Clark and Guba (17) offer a logical structure for the adoption process in education. The structure involves (1) gathering data, (2) inventing solutions, (3) engineering packaged programs, (4) testing the
packages, (5) informing others about the programs, (6) demonstrating the programs, (7) training the users, and (8) servicing and nurturing installation of the programs.

Studies by Tucker (106) and Kivlin (49) suggest that the characteristics of an innovation may be less important in the process of adoption that the fact that the individual who is affected perceives the new idea to have advantages over the idea it replaces or modifies.

Studies by Rogers (95), Marsh (73), and Wilkening (109) which have analyzed the relationships between division of new farm practices and the characteristics of target systems have tended to show that adoption of innovations is related to such demographic variables as socio-economic level, educational level, and a cosmopolitan outlook.

Lionberger (53) provides the researcher with many generalizations regarding the adoption of innovations. Some selected generalizations include: (53:17)

1. Practices compatible with existing ideas and beliefs are most likely to be adopted quickly.
2. The farmer must perceive the need for the new practice.
3. Innovations that cost less money are more quickly adopted.
4. An easily demonstrable practice is more quickly adopted.
5. Social groups influence adoption rates.
6. The neighborhood exerts an influence on adoption rates.
7. The social clique influences adoption patterns.
8. The satisfied man does not change much.
9. People are influenced by groups of which they are not members.
10. Group processes can effectively advance an educational program.
11. Value changes result from widened horizons.
12. Formal education is associated with adoption.

These generalizations concisely sum what has been learned about the adoption of innovations. They have been culled from over 100 studies too numerous to cite here.

Research on Change Agents and Change Mechanisms.

Change agents and change mechanisms have been the locus of much research in the fields of rural sociology, medicine, and voter opinion. As this study, in effect, will determine the effectiveness of short term training programs as a change mechanism in education, it is reasonable to include a review of pertinent literature. Examples of change mechanisms range in scope from the general mass media, informal channels of communication, and formal administrative organizations, to the specific of packaged programs, demonstrations, and in-service workshops.

The concept of the "change agent" was first stated by Lippit (68) in his study of small group dynamics. The concept has had widespread development by students of the change process in rural sociology (110), mass communications (18), and voter behavior studies (52).

Rogers (95) defines the term "change agent" as "a professional persons who attempts to influence adoption decisions in a direction that he feels is desireable." The change agent has also been referred to as a "local influential", an "adoption leader", "opinion leader", or as a "leader" in studies by Rogers (95), Lionberger (59), and Welch and Wilkening (108).

The change agent may be either an "outsider", not an accepted in-
group member, or an "insider", one who is part of the target system to be changed. Both roles have proven effective in facilitating change.

In a study of the effect of personal contact and influence by "insiders", Coleman (18) found a relationship between physicians' adoption of new drugs and the influence of professional friends. Lazarsfeld (52) found that personal contact by "opinion leaders" was more influential in effecting change in how people vote than the mass media was. The only exception to this pattern was among the opinion leaders themselves, who were found to be more influenced by mass media than personal contact.

Studies by Hawkins (35) and Ferber and Wales (23) support the importance of outside change agents in the dissemination of information about new drugs to physicians. The latter study found that drug companies' detail men are a more important source of information about new drugs than doctors admit in personal interviews.

The identification and usefulness of a variety of change agents and information sources at various stages in the process of diffusion have been supported by Wilkening (110), Rogers (96), and Copp (19). Each of these studies suggests the selective use of such change mechanisms as mass media, personal contact, expert and consultant help, and the like at various stages in the change process.

Data from a study by Stone (102) indicate that to a certain point, the work of an outsider change agent is positively related to innovation and, after a point change agents in the form of local adopters seem to become highly effective in bringing about change through personal contacts. This substantiates findings reported earlier in this chapter.
Some studies have been done in regard to educational change agents and mechanisms. They are, however, only very faint beginnings of what has to be known so that educational change can become rational, planned and properly evaluated.

Carlson found that the school superintendent influences the rate of adoption and thus must be considered in efforts aimed at increasing school systems adoption rates. Brickell's (14) findings concur with Carlson's observations on the worth of the administrator as a change agent. He found that "new types of instructional programs are introduced by administrators.... (and) to disseminate them.... it will be necessary to convince administrators of their value". (14:22)

Ovard (87) suggests that the effectiveness of change agents is directly correlated to the quality of educational leadership provided them. He concurs with Carlson and Brickell that the school administrator is the key person for effecting change in the schools.

The use of widespread field demonstrations such as those associated with the diffusion and implementation of staff utilization practices proposed by Trump, have not been common in education. Yet Trump's model (105) which involved over 100 schools for a period of four years is a possible change mechanism to emulate.

Closely related to the above is the in-service training program as a change mechanism. Flanders (25) used them to influence teacher adoption of interaction analysis as a means of viewing their teaching behavior. Indeed, the in-service programs analyzed in this investigation are similar attempts by the Kettering Foundation and the University of Massachusetts at changing the behavior of participants.
The Federal government has invested monies in change mechanisms in that they have established twenty regional educational laboratories to effect planned educational change in various regions of the United States. This enterprise, funded under the auspices of the Elementary and Secondary Education Act of 1965, has as its primary task finding ways to accelerate the diffusion of innovations into the schools. This concept, regretfully, has been of late curtailed, because of lack of money to maintain the centers. The decrease of activity will, hopefully be temporary.

Heck (37) in his analysis of change in Ohio schools, recommends further study of change mechanisms. He suggests that, "certainly the effectiveness of the use of change mechanisms such as mass media, packaged programs, field demonstrations, in-service workshops, and other types of persuasion and influences, must be carefully studied". (37:38)

Summary.

This review of literature has pointed out three major points in regard to research on change and innovation. First, a tremendous gap exists between what is known about change in education, and what is known about it in other fields. Change and innovation in education is haphazard, ill planned, poorly motivated, and imprecisely evaluated. The reasons for this are many, and some of these have been pointed out. But the main reasons for this is an almost complete lack of valid research findings upon which viable change can be based. Carlson, Brickell, Clark, and Guba, among others have started making inroads into this problem, but their efforts are only beginnings of what should be a full-
scale investigation of this crucial area.

A second point that is highly pertinent to this study, is the fact that the diffusion of awareness and the diffusion of adoption are two distinct processes. Ryan and Gross, Menzel, Katz and Lionberger, among others, have all pointed out the most influential information sources at the awareness stage and at the adoption stage. It appears that impersonal means of communications can make people aware, but that more personal means are necessary to legitimate decisions to adopt. At least two studies have shown that it is harder to accomplish adoption than it is to make practitioners aware of new ideas, practices or products. These findings, admittedly, pertain to other fields, but no evidence exists in education upon which an investigator might generalize, hence the review of literature in other fields.

A third point that has been inferred in the first two, is that the generalizations possible in other fields result from a broad empirical base of knowledge accumulated for many years. No similar broad base of knowledge exists for education in regard to innovation and change. The only way pertinent research is possible is to base or start an investigation from what has been learned in earlier studies, and build upon their findings. At the present time this is impossible in education for a broad base of valid research findings simply does not exist. This study is an effort to add to what little we know about educational change and innovation. Future studies, undoubtedly will investigate variables this study does not, control variables not here controlled, and build upon what is found herein, but a beginning must be made.
CHAPTER III

METHODOLOGY AND PROCEDURES

The investigation described in this section took place in the summer of 1968 and through the 1969 academic year. The data gathered will determine the extent to which selected summer programs were recognized as: (1) Sources of information about educational innovations of interest, and (2) sources of information leading to the adoption of innovations.

To test the above, participants of all training programs concerned were polled on a pre and post conference inventory, and a six months follow-up inventory. The first two inventories were administered at the conference, the latter, via the mails. Matched inventories provided data ascertaining the effectiveness of the program.

Subjects

The subjects that provided the data for this study are: the participants of the University of Massachusetts workshop, those who attended the I/D/E/A institutes in the summer of 1968, and a random sample of the participants of the I/D/E/A Hawaiian innovation seminars.

The University of Massachusetts workshop was attended by approximately 400 educators filling a wide variety of educational roles. The population was not stratified, for anyone who paid their fees could attend. The result was, a mixture of administrators, guidance counselors, department heads, and teachers attended. Regretfully, the people in charge of procuring responses on the pre and post conference inventories
did not do their job well. The result is a very low total return on these inventories, and a resulting clouding or confounding of any conclusions that can be drawn from them. The situation has been further compounded by the low number of responses by this group on the six months follow-up inventory, by far the lowest percent of returns of any group. This topic will be discussed in more detail in the section on data and instrumentation.

The I/D/E/A seminars were held in the summer of 1968 in four different locations, The College of Southern Utah, Mills College, Davidson College, and Amherst College. Each seminar had approximately 100 participants attending. The population was a stratified one, for participants were intensively screened in order that selected types would attend. I/D/E/A used the Brickell thesis as a rationale for doing this (See p. 43). Briefly the thesis states that the school administrator is the prime agent to bring about change in local school settings. As a result the vast majority of those attending these institutes were school administrators. An investigation of this type with its emphasis on innovation should in light of this thesis yield results that show this group far more innovative than the non-stratified University of Massachusetts workshop. The Davidson and Mills College returns on the pre and post conference inventories were quite high. The College of Southern Utah and Amherst College returns on these inventories were somewhat lower, but still well above the accepted limits for questionnaire responses. Returns on these inventories and on the six months follow-up will be discussed in more detail in the section on data and instrumentation.
The people who attended the I/D/E/A seminars in the Summer of 1967 were also a very select group. The population consisted of selected educators and selected directors of innovative PACE projects. Again, this group was predominantly administrators, and one would expect more innovativeness from them, if the Brickell thesis is valid. No pre and post conference inventories are available from this group. This has happened because the inventories used at the Hawaiian conference differed from the ones used in this study. The responses collected at the Hawaiian conference have already been analyzed by Richard I. Miller (1967). A one-fifth random sample of these participants have been polled with the same follow-up inventory used in this study. Returns on these, and possible uses to be made of these data will be discussed in later sections of this chapter.

Randomization enters into the population and sample only on the follow-up to the Hawaiian conference participants. All other groups were followed-up in their entirety, that is the entire group for which matched pre and post inventories are available. Differences do exist between the groups, but little in the way of control could be exercised in this regard by the investigator.

The population and sample used in this investigation closely resembles the populations and samples evaluated in other studies on this topic. In workshop evaluation it is common to poll the entire group of participants as was done here. The most frequent form of data collection is the mailed questionnaire, which was also used in this investigation. In studies done to date on the source of new ideas, the whole population of an area is usually polled by questionnaires or interviews,
and hence closely resembles techniques used in this study. In short, the population and sample used in this investigation are not atypical in studies of this type. Indeed, it is the rare study in education that is able to control the variable of differences in groups at all. This investigator is aware of the need to do so, but because of limitations imposed by our field, is also aware of the difficulty in achieving what "ought to be".

The Design

The design of the study is best explained by using the following schema:

<table>
<thead>
<tr>
<th>Seminars Evaluated</th>
<th>Pre-Conference Inventory</th>
<th>Post Conference Inventory</th>
<th>Follow-up Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/D/E/A Hawaiian Seminars - 1967 1,000 participants</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>1/D/E/A Institutes on Innovation - 1968 400 participants</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>University of Massachusetts Workshop on Flexible Scheduling and Innovation - 1968 400 participants</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The independent variables involved in this design include exposure to a short term training program concerned with educational innovations and the extent of participants' financial involvement in paying for attending the conference. The dependent variable is responses made by participants on a pre and post conference inventory, and a six months
follow-up inventory. Some variables do intervene, however. First, the degree of innovativeness of participants, or the school districts they returned to are not controlled. Neither is the apparent differences in stratification procedures between groups who paid their way and those who were paid to attend. A third variable to be considered in this context is the fact that the people who were paid to attend might feel an obligation to answer the pre and post conference inventory in a positive way. This does not apply on the six months follow-up, however, for the participants cannot link it with the conference except by independently perceiving the program as a source of information. A low return on some of the inventories, most particularly in regard to the University of Massachusetts workshop, could be a confounding factor.

Most of these variables have not been controlled in any study done on the effectiveness of short term training programs. In fact, most studies completed do not control variables this study controls. The gratification effect is present throughout most training programs evaluations, but it is controlled on this study's six month follow-up. By controlling this gratification variable, there is also less chance for Hawthorne Effect to bias the findings. If participants do not see the link between the inventory and the conference, it follows that they do not know their performance in regard to the conference is being evaluated, hence no Hawthorne Effect.

The design of this investigation is comparable to those used in prior training program evaluations. Very few training program evaluations use control groups. The comparison of two types of program participant (paid, not paid variable) is a departure from most studies done
in regard to sources of information. Most investigations pertaining to idea sources use no comparisons with other groups in determining their findings. This investigator feels that adding this dimension to the study at hand improved its chances of determining meaningful and useful findings.

The present investigation in many ways is comparable to the time series experimental design explained in Gage's *Handbook of Research on Teaching* (34) by Campbell and Stanley (34:207). The time series design is one where periodic measurement of a group or an individual is interrupted by the inclusion of an experimental variable (treatment) and the group or individual is measured periodically thereafter to determine any changes that were caused by the treatment. Considering 0's as observations, and X as the experimental variable, the design looks like this:

\[ 0_1 \ 0_2 \ X \ 0_3 \ 0_4 \]

This design typified much of the classical nineteenth century experimentation in the physical sciences and biology. The design of the present investigation, although not identical, very closely resembles this design. With the 0's and the X meaning the same thing as in the above explanation, this study could be drawn as: \[ 0_1 \ X \ 0_2 \ \cdots \cdots \ 0_3 \]

Observation 1 is the pre-conference inventory; the X is the conference experience; observation 2 is the post-conference inventory; and observation 3 is the six months follow-up inventory. The differences are that, (1) only one pre-treatment observation has taken place, and (2) the six months follow-up is not taken at the same time interval as in the time series design. That is, observations in the time series design are equally spaced, and in this design, they are not.
Campbell and Stanley point out one source of possible internal validity in this design, and stress one source of very strong external validity. (34:211) The design is prone to the design weakness called history. History means that some rival experience could intervene between observations, besides the experimental treatment, and this rival experience could cause any differences found when pre and post treatment inventories are compared.

One source of strength in this design say Campbell and Stanley is that the periodic testing can be considered almost "non-reactive" (34:211). They are non-reactive in the sense that school people attending these conferences expect to be polled as part of that experience. In this way they constitute a natural part of the environment and are non-reactive in that they are typical of the universe to which one wants to generalize.

Data and Instrumentation

Three instruments were used to gather data. The participants were given an inventory to fill out the first day of the conference. (See Appendix A). It primarily asked the respondent to list the innovations they had adopted in their work in the last year. It then asked participants what they expected would transpire during the program, and what they hoped to derive from it.

After the program experience the participants were again polled, (See Appendix B). This post-conference inventory asked the participants to identify: (1) planned program events they deemed fruitful, (2) other
occurrences they thought fruitful, and (3) ways the conference influenced their behavior.

Six months after the program, the participants were sent a follow-up inventory that in no way could be identified with the programs, (See Appendix C). In this inventory they were asked to: (1) list the innovations they had adopted in the last six months, (2) identify where they first heard about the new innovation, and (3) list if any other resources were used in translating this awareness into practice.

These instruments in a very direct way measure what the study attempted to determine. They assess innovations perceived as having been adopted by participants, and further measure the conferences effectiveness as a source of information about innovations, and their effectiveness as sources of information contributing to the adoption of innovations. Because the instruments are not standardized, no reliability or validity coefficients are available. However, a selected group of Applied Research Fellows at the University of Massachusetts read them and independently of each other concurred unanimously that the inventories measure what this investigation attempted to determine.

The University of Massachusetts workshop yielded ninety-four usable matched pre and post conference inventories. As low as this return was, it would have been lower, except this investigator mailed the post conference inventory to non-respondents shortly after the conference ended. Prior to this mailing there had been approximately forty matched pre and post conference inventories. When one considers that this return of forty represents only about 10% of those who participated, it can readily be seen how unconcerned officials running the conference were with evalu-
ation. Through the use of this mailed inventory, it was possible to get the returns up to ninety-four, which, although still low, is more than twice the original return.

The I/D/E/A programs in the summer of 1968 yielded much higher returns. The Davidson program yielded eighty-seven useable matched pre and post conference inventories, the Mills program eighty-four, and the Amherst and Southern Utah programs, sixty-eight each. Each of these programs had approximately 100 participants, so the returns are quite high.

The random sample of the I/D/E/A Hawaiian Seminars of 1967 numbered 200. They were sent a personal letter typed on the MTST typewriter, six months after the conference ended, (See Appendix C). The returns from this mailing numbered 114 or 57% of the random sample polled.

These above mentioned 1968 groups were also sent a personal letter, typed on the MTST typewriter, six months after the conference, on January 22, 1969, (See Appendix C). As mentioned before, the participants were asked three questions on this inventory. Non-respondents were followed-up four weeks later with a stenciled post card reminding them to fill out the inventory. Returns numbered 253 out of the original 398 letters mailed, or approximately 64%. When one considers the inventories returned as unknown (14), the figures approach 67%. Returns this high are considered more than adequate for purposes of analysis.

To break down the 1968 groups into separate return percentages, one sees some disparities. The I/D/E/A participants returns are quite high. The Amherst program returns are 65%, the Davidson returns are 68%, the Mills returns are 64%, and the Southern Utah returns are 65%. The Uni-
versity of Massachusetts workshop returns are only 55% of those matched
pre and post inventories that were available. They are considerably
lower than the I/D/E/A returns. This investigator feels a contributing
factor to these returns is that participants were supposed to receive
two academic credits for attending the University of Massachusetts con-
ference, and as of the time of the inventory mailing, had not received
them.

To the investigator's knowledge, no experimenter bias enters into
these returns. As explained earlier, the inventory can be considered
non-reactive, and hence little bias is possible. All group were polled
in the same way, thus minimizing testing differences between the groups.

Analysis

The data gathered by these instruments are descriptive in nature.
The kinds of innovations perceived as having been adopted range from new
ideas in curriculum, teaching methods, and organizational arrangements,
to new ideas in facilities and administrative procedures. Most partici-
pants hoped to gain new ideas, and ways to implement them. Some were
greatly heartened by what transpired and stated their intent to innovate
as soon as possible upon their return.

The data were analyzed by the investigator and two independent ra-
ters. The other two raters were Applied Educational Research Fellows
from the University of Massachusetts. They rated the data independently
of each other, and observed the rules established by the chief investiga-
tor. The rules for data analysis were as follows:
1. The respondent must specifically state the program as a source of ideas about innovations of interest, or as a source of ideas leading to the adoption of innovations.

2. When the respondent gave only one information source for each innovation it was assumed he was referring to question number two on the follow-up inventory and not to question number three. Hence, he was considered successful on question number two if he identified the program as a source of information, and unsuccessful on question number three.

3. When the respondent mentioned the adoption of no innovations his return was not used.

The Kendall Test for inter-rater reliability was used to determine the degree of rater concordance.

The reporting of these data will take the form of comparisons of percentages for the whole group and for sub-groups contained therein. Frequency distributions will also be used to show the numbers of participants considered successful or unsuccessful to the conditions set forth in the hypotheses.

When testing hypothesis one that a minimum of one participant in ten will perceive the program as a source of information about innovations of interest, the analysis will take the following form:

<table>
<thead>
<tr>
<th>Innovations of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize the Programs</td>
</tr>
<tr>
<td>N = or %</td>
</tr>
</tbody>
</table>

The figures and percentages derived and included in each cell would determine whether hypothesis one was accepted or rejected.
Hypothesis two was analyzed in the same manner. The factorial design for testing this hypothesis will look as follows:

Table 7
Innovations Adopted

<table>
<thead>
<tr>
<th>Recognize the Programs</th>
<th>Do Not Recognize the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = or %</td>
<td>N = or %</td>
</tr>
</tbody>
</table>

Comparisons were made and further statistical tests were possible. Because certain conditions could be assumed, (e.g., normal distribution, independence, etc.) a Chi-square test of significance for "goodness of fit" was made. "Goodness of fit" refers to how well the data observed fits to what one would "expect" under similar circumstances. Chi-square tests allow the observation as to whether the data observed is significantly different from that which is expected. Hypotheses three and four allow comparisons on the paid, not paid variable. These data will be presented as follows:

Table 8
Innovations of Interest

<table>
<thead>
<tr>
<th>Recognize the Programs</th>
<th>Do Not Recognize the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paid</td>
<td></td>
</tr>
<tr>
<td>Not Paid</td>
<td></td>
</tr>
</tbody>
</table>
Again, a Chi-Square test of significance was made to determine if the data observed differed significantly from that which was expected.

Hypotheses five and six allow the investigator the opportunity to determine the relationship between subject matter of the conferences and innovations of interest, or innovations perceived as adopted by participants. The data were analyzed in the following manner:

Table 9
Innovations of Interest to Participants

<table>
<thead>
<tr>
<th>Pertain to Conference Topics</th>
<th>Do Not Pertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = or %</td>
<td>N = or %</td>
</tr>
</tbody>
</table>

Table 10
Innovations Perceived as Adopted and in Addition to Those Cited on the Pre-Conference Inventory

<table>
<thead>
<tr>
<th>Pertain to Conference Topics</th>
<th>Do Not Pertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = or %</td>
<td>N = or %</td>
</tr>
</tbody>
</table>

Hypotheses seven and eight were analyzed using frequency distributions. The design for reporting the data is as follows:

Table 11
Participants Perceiving the Programs As Experiences Heightening Their Aspirations to Innovate

<table>
<thead>
<tr>
<th>Recognize the Conference as Heightening Their Aspirations to Innovate</th>
<th>Do Not Recognize the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize the Programs as Sources of Information</td>
<td></td>
</tr>
<tr>
<td>Do Not Recognize the Programs</td>
<td></td>
</tr>
</tbody>
</table>
A Chi-Square test of significance was used to determine if data observed differed significantly from the data expected.

Other questions besides the major hypotheses were also tested. The administrator's frequency distributions were analyzed. The different educational roles were also categorized according to whether the participants paid to attend or not. The data will be presented in a 2 x 5 factorial design as follows:

<table>
<thead>
<tr>
<th></th>
<th>Recognize the Programs</th>
<th>Do Not Recognize Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A further variable will be added to those already mentioned. Hypotheses one and two will be compared on the variable of sex. Comparisons will be made to determine if men or women had higher degrees of "success" at these conferences.

The data allow two other comparisons. For both questions two and three on the six-months follow-up, (See Appendix C), frequency distribu-
tions of the specific information source listed by participants will be constructed. The data will be reported in the following form:

Table 13

Mentions of Information Sources
Questions Two and Three

<table>
<thead>
<tr>
<th>Information Sources</th>
<th>Number of Specific Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Literature</td>
<td></td>
</tr>
<tr>
<td>I/D/E/A or University of Massachusetts</td>
<td></td>
</tr>
<tr>
<td>Visits to Other Schools</td>
<td></td>
</tr>
<tr>
<td>Consultants</td>
<td></td>
</tr>
<tr>
<td>National Conferences</td>
<td></td>
</tr>
<tr>
<td>Workshops and Institutes</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
</tr>
</tbody>
</table>

The data were independently content analyzed, and an inter-judge reliability check was carried out to determine the degree to which the judges arrived at concordance.
CHAPTER IV
ANALYSIS OF DATA

The data that were analyzed were gathered by the three inventories explained in the previous chapter. The responses of participants were rated independently by three research Fellows based at the University of Massachusetts.

The Kendall Coefficient of Concordance test was used to determine inter-judge reliability on the rating of the inventories. Of the 734 decisions made by the raters they disagreed seventeen times. The degree of concordance was $W = .977$. The returns from each conference can be seen in Table 14.

<table>
<thead>
<tr>
<th>Conference</th>
<th>Number of Returns</th>
<th>Number of Disagreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amherst</td>
<td>44</td>
<td>3</td>
</tr>
<tr>
<td>Mills</td>
<td>54</td>
<td>2</td>
</tr>
<tr>
<td>Southern Utah</td>
<td>44</td>
<td>2</td>
</tr>
<tr>
<td>Davidson</td>
<td>58</td>
<td>6</td>
</tr>
<tr>
<td>University of Massachusetts</td>
<td>52</td>
<td>2</td>
</tr>
<tr>
<td>Hawaii</td>
<td>115</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>367</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Frequency distributions were constructed from the rated data. Per-
percentages for each cell of these frequency distributions were derived to make the reporting of the data more comprehensible. The Chi-square statistical test of significance was used to determine if the data collected differed significantly from what was expected. The formula for this test is:

\[ X^2 = \frac{O - E^2}{E} \]

Where:
- \( X^2 \) = Chi Square
- \( O \) = Observed Values
- \( E \) = Expected Values

The frequency distributions, derived percentages, and results of the Chi-square tests, for each hypothesis will be reported, followed by other analyses possible considering the data collected.

**Hypothesis One**

Hypothesis one was stated as follows:

1. A minimum of one in ten participants, after six months, will perceive the summer programs as a source of information about educational innovations of interest.

The data collected pertaining to this hypothesis appear in Table 15.

| Table 15 |
|-----------------|-----------------|
| Number of Percent of Participants Perceiving the Programs as Sources of Information about Innovations of Interest |
| Participants Perceiving the Conferences | Participants Not Perceiving the Conferences |
| N = 108 = 29% | N = 259 = 71% |
| Total N = 367 |
Twenty-nine percent of the respondents perceived the programs as sources of information about educational innovations of interest, and seventy-one percent did not. The results of the Chi-square test significantly confirmed hypothesis one \( (X^2 = 136.24; \text{df} = 1; p < .0005) \). It was concluded, therefore, that significantly more than one participant in ten perceived the programs as sources of information about educational innovations of interest.

Hypothesis Two

Hypothesis two was stated as follows:

2. A minimum of one in twenty participants, after six months, will perceive the summer programs as a source of information contributing to the adoption of innovations.

The data collected pertaining to hypothesis two appear in Table 16.

Table 16

Number and Percent of Participants Perceiving the Programs as Sources of Information Contributing to the Adoption of Innovations

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participants Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 40 = 11%</td>
<td>N = 327 = 89%</td>
</tr>
<tr>
<td>Total N = 367</td>
<td></td>
</tr>
</tbody>
</table>

Eleven percent of the respondents perceived the programs as sources of information contributing to the adoption of innovations, and eighty-nine percent did not. Although the trend of participant's responses was
in the direction hypothesized, considerably more than one in twenty identified the conferences as sources of information. The results of the Chi-square test significantly confirmed hypothesis two \( (X^2 = 6.36; df = 1; p < .025) \). In light of these results it was concluded that significantly more people perceived the programs as sources of information contributing to the adoption of innovations than was hypothesized.

**Hypothesis Three**

**Hypothesis Three A**

Hypothesis Three A was stated as follows:

A minimum of one in ten participants who paid their way to a summer program will perceive the program as a source of information about educational innovations of interest.

The data collected pertaining to hypothesis three A appears in Table 17.

**Table 17**

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participants Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 21 [40%]</td>
<td>N = 31 [60%]</td>
</tr>
<tr>
<td><strong>Total N = 52</strong></td>
<td></td>
</tr>
</tbody>
</table>

Forty percent of the participants perceived the program as a source of information about educational innovations of interest, and sixty percent did not. The Chi-square test results significantly confirmed hy-
Hypothesis three A \( (X^2 = 37.5; \text{df} = 1; \ p < .0005) \). It was concluded that significantly more participants who paid stipends to attend the conference recognized the program as a source of information about educational innovations of interest than was hypothesized.

**Hypothesis Three B**

Hypothesis Three B was stated as follows:

A minimum of one in ten participants who received stipends to attend a summer program will perceive the program as a source of information about educational innovations of interest.

The data collected pertaining to hypothesis three B appear in Table 18.

**Table 18**

Number and Percent of Participants Who Were Paid Stipends to Attend and Their Perceptions of the Programs as Sources of Information about Innovations of Interest

<table>
<thead>
<tr>
<th>Participant Perceiving the Conference</th>
<th>Participants Not Perceiving the Conference</th>
</tr>
</thead>
<tbody>
<tr>
<td>( N = 63 \ = 32% )</td>
<td>( N = 137 \ = 68% )</td>
</tr>
<tr>
<td><strong>Total</strong> ( N = 200 )</td>
<td></td>
</tr>
</tbody>
</table>

Thirty-two percent of the participants perceived the programs as sources of information about educational innovations of interest, and sixty-eight percent did not. The results of the Chi-square test significantly confirmed hypothesis three B \( (X^2 = 92.45; \text{df} = 1; \ p < .0005) \). It was concluded, therefore, that significantly more respondents, who received stipends to attend the summer programs, perceived the programs
as sources of information about educational innovations of interest than was hypothesized.

Comparisons of the two groups included in hypothesis three A and three B were impossible due to both hypotheses being confirmed at such a high level of significance (p < .0005). No significant differences exist on the variable of being paid to attend the conference or paying one's own expenses to attend the conferences.

Hypothesis Four

Hypothesis Four A

Hypothesis Four A was stated as follows:

A minimum of one in twenty participants who paid their way to a summer program will perceive the program as a source of information contributing to the adoption of innovations.

The data collected pertaining to hypothesis four A appear in Table 19.

Table 19

Number and Percent of Participants Who Paid Stipends to Attend and Their Perceptions of the Program as Sources of Information Contributing to the Adoption of Innovations

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participants Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 12 = 23%</td>
<td>N = 40 = 77%</td>
</tr>
<tr>
<td></td>
<td>Total N = 52</td>
</tr>
</tbody>
</table>

Twenty-three percent of the participants perceived the program as a source of information contributing to the adoption of innovations, and
seventy-seven percent did not. The Chi-square test yielded results significantly confirming hypothesis four A ($X^2 = 27.00; \text{df} = 1; p < .0005$). In light of these results, it was determined that significantly more than one in twenty participants perceived the programs as a source of information contributing to the adoption of innovations.

**Hypothesis Four B**

Hypothesis Four B was stated as follows:

A minimum of one in twenty participants who received stipends to attend a summer program will perceive the program as a source of information contributing to the adoption of innovations.

The data collected that pertains to hypothesis four B are contained in Table 20.

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participants Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>$N = 17 = 8%$</td>
<td>$N = 183 = 92%$</td>
</tr>
<tr>
<td><strong>Total</strong> $N = 200$</td>
<td></td>
</tr>
</tbody>
</table>

As can be seen only eight percent of the respondents perceived the programs as sources of information contributing to the adoption of innovations, whereas ninety-two percent did not. The derive Chi-square value significantly confirmed hypothesis four B ($X^2 = 4.90; \text{df} = 1; p < .05$). From these results it was concluded that more than one in
twenty participants perceived the programs as sources of information contributing to the adoption of innovations.

When comparing the two groups included in hypothesis four A and four B it can be seen that hypothesis four A was confirmed at a much higher level of significance than was hypothesis four B. Because both hypotheses were confirmed no direct statements bearing on differences between the groups can be made. However, by analyzing the percentages in Table 19 and 20, it can be seen that a higher percentage of participants paying their own fees recognized the programs as sources of information contributing to the adoption of innovations than those who were paid stipends to attend.

Hypothesis Five

Hypothesis five was stated:

A minimum of one time in ten, the subject matter of innovations perceived, after six months, as being of interest to the participants will be subject matter which was offered at the programs.

The data gathered did not allow this hypothesis to be tested without first qualifying the definition of subject matter of the programs. During the analysis of these data it became clear that all innovations listed by respondents as being of interest to them, and all innovations perceived by them as being adopted, in some way related to conference topics. So much material was introduced at these conferences that any innovation listed by participants fit into one topic covered or another.

It was decided that because of this limiting factor, only those respondents innovations that specifically stated the conference as a source
awareness or as a source of information contributing to the adoption of innovations, would be counted. If the participant identified the programs only once, yet cited many innovations, it was assumed that awareness of innovations or the ability to translate that awareness into practice emanated from the programs.

With the above qualification in mind the data for hypothesis five appear in Table 21.

Table 21

Innovations of Interest to Participants that Pertain to Conference Topics

<table>
<thead>
<tr>
<th>Pertain to Conference Topics</th>
<th>Do Not Pertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 108 = 29%</td>
<td>N = 259 = 71%</td>
</tr>
</tbody>
</table>

Total N = 367

Twenty-nine percent of the participants identified the programs as sources of information about innovations of interest, and seventy-one percent failed to do so. When the Chi-square test was used it was determined that hypothesis five was significantly confirmed \( (X^2 = 136.24; \text{df} = 1; p < .0005) \). With these figures to be utilized, and the qualification of the definition mentioned above, it was concluded that significantly more than one time in ten the innovations perceived as being of interest to conference participants, pertained to topics covered at the conference.
Hypothesis Six

Hypothesis Six was stated as follows:

A minimum of one time in twenty, innovations that are perceived by participants as having been adopted six months after the conference, and that are in addition to those perceived as having been adopted prior to the programs, will relate to the subject matter of innovations offered at the programs.

The same qualification of definition necessary in order to test hypothesis five applied here. All the innovations surviving the screening process of comparing the pre-conference and six months follow-up listing of innovations adopted, still pertained in some way to conference topics. The only way to resolve this was to count only those participants who specifically identified the programs as a source of information contributing to the adoption of innovations. The data analyzed are included in Table 22.

Table 22

Innovations Perceived as Adopted by Participants in Addition to Those cited on the Pre-Conference Inventory

<table>
<thead>
<tr>
<th>Pertain to Conference Topics</th>
<th>Do Not Pertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 40 = 11%</td>
<td>N = 327 = 89%</td>
</tr>
</tbody>
</table>

Total N = 367

Eleven percent of the participants identified the programs as sources of information contributing to the adoption of innovations, and eighty-nine percent did not. The results of the Chi-square test significant-
ly confirmed hypothesis six \(X^2 = 6.36; \text{df} = 1; p < .025\).

It was, therefore, concluded that significantly more than one time in twenty the innovations perceived by conference participants as being adopted six months after the conference pertained to topics covered at the conference.

**Hypothesis Seven**

Hypothesis Seven was stated as follows:

A minimum of one participant in ten who indicate on a terminal conference inventory that the conference heightened their aspirations to innovate, will, after six months, perceive the summer programs as a source of information about educational innovations of interest.

The data pertaining to hypothesis seven appear in Table 23.

**Table 23**

Participants Who Indicate Heightened Aspirations To Innovate and Their Perceptions of the Programs as Source of Information About Innovations of Interest

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participants Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 55 = 31.4%)</td>
<td>(N = 120 = 68.6%)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total N = 175</strong></td>
<td></td>
</tr>
</tbody>
</table>

Slightly over thirty-one percent of those participants who credited the conference with heightening their aspirations to innovate recognized the conference as a source of information about educational innovations of interest. Over sixty-eight percent of the respondees did not perceive
the conference as a source of information. The Chi-square test results significantly confirmed hypothesis seven ($X^2 = 76.05; \ df = 1; \ p \leq .0005$). In light of the foregoing, it was concluded that significantly more than one participant in ten, who indicated on a terminal conference inventory that the conference heightened their aspirations to innovate, perceived the programs as a source of information about educational innovations of interest.

The participants who did not indicate heightened aspiration to innovate were analyzed. Their percentage distribution very closely resembled their colleagues who did indicate heightened aspirations. Thirty-four percent recognized the programs as a source of information about educational innovations of interest, and sixty-six percent did not. No Chi-square value was derived, for it was evident that the value would be equally as significant as the results of the test on hypothesis seven.

**Hypothesis Eight**

Hypothesis Eight was stated as follows:

A minimum of one participant in twenty who indicate on a terminal conference inventory that the conference heightened their aspirations to innovate, will, after six months perceive the summer programs as a source of information contributing to the adoption of innovations.

The data pertaining to hypothesis eight are contained in Table 24.
Table 24

Participants Who Indicate Heightened Aspirations to Innovate And Their Perceptions of the Programs as Sources of Information Contributing to the Adoption of Innovations

<table>
<thead>
<tr>
<th>Participants Perceiving the Conferences</th>
<th>Participant Not Perceiving the Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 18 = 10.3%</td>
<td>N = 157 = 89.7%</td>
</tr>
</tbody>
</table>

Total N = 175

Slightly over ten percent of the participants who had indicated heightened aspirations to innovate, recognized the programs as a source of information contributing to the adoption of innovations. Almost ninety percent failed to recognize the programs as a source of information. The results of the Chi-square test significantly confirmed hypothesis eight ($X^2 = 9.00; df = 1; p < .005$). It was concluded that significantly more than one in twenty participants perceived the programs as a source of information contributing to the adoption of innovations.

The percentages for those not indicating heightened aspirations, were almost identical with those who did cite heightened aspirations. Eighty-nine percent did not perceive the programs as a source of information, and eleven percent did. Differences between the two groups were not tested for it is evident that both groups would significantly confirm the hypothesis.

The separate conferences were analyzed to determine if one or more of them did not confirm hypotheses seven and eight. This was done because the composite figures significantly confirming both hypotheses were
the pooled figures for all the conferences.

The Mills College conference responses significantly confirmed hypothesis seven \( (X^2 = 9.80; \text{df} = 1; p < .005) \). There were no significant differences between observed and expected values in regard to hypothesis eight (see Appendix G).

The Davidson College conference responses significantly confirmed hypothesis seven \( (X^2 = 12.80; \text{df} = 1; p < .005) \). There were no significant differences between theoretical and observed values in regard to hypothesis eight (see Appendix G).

The Southern Utah conference responses significantly confirmed hypothesis seven \( (X^2 = 12.25; \text{df} = 1; p < .005) \). There were no significant differences between expected and observed values in regard to hypothesis eight (see Appendix G).

The Amherst College conference returns could not be analyzed because the participants who credited the conference with heightening their aspirations to innovate, were of too low a number to be analyzed with precision.

The University of Massachusetts workshop responses significantly confirmed hypothesis seven \( (X^2 = 21.33; \text{df} = 1; p < .005) \). Hypothesis eight was also significantly confirmed by the participants \( (X^2 = 18.00; \text{df} = 1; p < .005) \).

All the conferences analyzed separately confirmed hypothesis seven significantly. The lowest probability that these findings were due to chance was five times in a thousand. A probability of .005 is quite acceptable in accepting or rejecting a hypothesis. It was concluded that all the conferences were identified at a significant level of probability.
as sources of information about educational innovations of interest.

The Mills College, College of Southern Utah, and Davison College returns did not significantly confirm hypothesis eight. This means that the number of participants perceiving the programs as sources of information contributing to the adoption of innovations did not differ statistically from that which was hypothesized. The Amherst College conference was not analyzed because the returns were too low, and the University of Massachusetts returns significantly confirmed hypothesis eight. That is, significantly more than one participant in twenty that attended this conference perceived it as a source of information contributing to the adoption of innovations.

**Other Analyses**

The data were further analyzed by constructing frequency distributions according to educational position held by the participants. The respondents were divided into five job classifications, Superintendent, Assistant Superintendent, Principals, and Assistant Principals, Department Heads, and Teachers (see Appendix G).

The data as explained above were further categorized by dividing the responses as to whether the participant had paid to attend or vice-versa. The result was four charts of frequency distributions (See Appendix G).

This categorizing of the respondents was done in hope that the Brakke hypothesis might be tested. It was determined, however, that because the number of non-administrators was so low, any conclusions drawn from these data would be questionable. It was decided instead, to test each role
category against themselves. That is, each role category was subjected to a Chi-square test of significance to determine if significantly more of that category perceived the programs as sources of information than did not, or vice-versa.

The participants who paid fees to attend the University of Massachusetts workshop did not differ significantly because of position held in identifying the conference as a source of information about educational innovations of interest. In addition, these same participants did not differ significantly in identifying the conferences as sources of information contributing to the adoption of innovations (see Appendix G).

The respondees who were paid to attend were also analyzed by position held. Of the Principals who received stipends, a significantly higher number did not perceive the conferences as a source of information about educational innovations of interest, than did perceive them ($X^2 = 3.83; df = 1; p < .06$).

Of Assistant Superintendents who received stipends, a significantly higher number also did not perceive the conferences as a source of information about educational innovations of interest, than did ($X^2 = 2.71; df = 1; p = .06$). All other categories were not significantly different (see Appendix G).

In regard to the conferences being identified as sources of information contributing to the adoption of innovations, three categories of position held failed to identify the conferences as sources of information in significantly greater numbers than those who did identify the conferences. Of Superintendents ($p < .005$), Assistant Superintendents ($p < .025$), and Principals ($p < .0005$) who were paid stipends, a signifi-
cantly higher number did not perceive the conferences as sources of information contributing to the adoption of innovations, than did. All other categories were non-significant (see Appendix G).

As mentioned prior, the great majority of the roles identified were administrative positions. Very few teachers or department heads attended the conferences. This low number of teachers made it impossible to test the efficacy of the Brickell thesis. No definitive statement can be made on the innovativeness of administrators as compared to other groups. Principals, however, failed to identify the conferences as sources of information in significantly higher numbers than those who did identify the conferences.

The respondees were categorized according to sex. This was done to determine if any differences in perceptions of the program between the groups could be detected. Chi-square tests of significance were conducted for questions two and three on the post conference inventory, first within sex on the yes or no responses, and then between sexes on the yes or no responses. These analyses required eight Chi-square values to be derived.

On question number two which determined the extent to which participants perceived the programs as sources of information about innovations of interest, significantly more men did not perceive the programs as sources of information about educational innovations of interest than did ($\chi^2 = 8.08; df = 1; p < .005$). On the same variable no significant differences could be detected between the number of women who perceived the conference as a source of information, and those who did not (see Appendix G). On this same variable when the sexes were contrasted, it
was determined that a significantly greater proportion of the women recognized the conference as an information source than did the men ($X^2 = 5.63; df = 1; p < .025$). As would be expected from the previous statement, a significantly greater proportion of the men failed to recognize the program as an information source when compared with the women ($X^2 = 27.05; df = 1; p < .0005$). It was concluded that a significantly greater proportion of the women perceived the programs as a source of information about educational innovations of interest when compared to the men.

On question number three which determined the extent to which participants perceived the programs as sources of information contributing to the adoption of innovations, significantly more men did not perceive the programs as sources of information contributing to the adoption of innovations, than did ($X^2 = 33.12; df = 1; p < .0005$). On the same variable significantly more women also failed to identify the programs as an information source than did ($X^2 = 5.11; df = 1; p < .025$). Again, when comparing the sexes on this variable, no significant differences could be detected between the groups on the frequency at which they identified the programs as sources of information contributing to the adoption of innovations. It was concluded, therefore, that neither men nor women had identified the programs to a greater degree than the other.

The number of mentions of specific information sources cited on the six months follow-up inventory have been accumulated (see Appendix G). The three information sources cited most often as making participants aware of innovations were (1) the professional literature, (2) the conferences being evaluated, and (3) visits to other schools. A com-
plete listing of all information sources cited is in Appendix G.

A similar frequency distribution has been constructed for question number three. The three information sources cited most often as contributing to the adoption of innovations were (1) consultants, (2) visits to other schools, and (3) the professional literature. It cannot be stated definitely, but it appears that these findings substantiate the findings of Ryan and Gross and Katz, that more impersonal means of communication can make people aware, but that more personal means are necessary to get people to adopt the innovation.

The final analysis of the data took the form of a frequency distribution of the number of information sources listed by each respondee for both questions two and three on the six months follow-up (see Appendix G).

In answering question two the vast majority (82%) cited either one, two or three information sources. The median number of information sources cited was two. In answering question three most respondees (92%) cited either none, one or two information sources. The median number of information sources cited was one. It was concluded that respondees were able to identify more information sources at the awareness level, than at the adoption level.
CHAPTER V
STUDY SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The focus of this investigation was an analysis of selected short term summer training programs concerned with educational innovation as to their effectiveness as sources of information for participants. Basic questions answered in this study included:

1. The extent to which the participants identify the programs as sources of information about educational innovations of interest.

2. The extent to which the participants identify the programs as sources of information contributing to the adoption of innovations.

3. The differences between two types of participants, one who were paid to attend, the other who paid their own fees, in regard to the two questions listed above.

4. The extent to which participants, who indicated on a post conference inventory that the conference heightened their aspirations to innovate, identify the programs as sources of information about innovations of interest, and identify the programs as sources of information contributing to the adoption of innovations.

This chapter is organized in the following manner:

1. Summary and Critique of Study Methods.
2. Discussion and Conclusions of Findings.
3. Recommendations.

Summary and Critique of Study Methods

The problem this investigation concerned itself with was the effec-
tiveness of selected short term summer programs concerned with educational innovations as sources of information. The programs were deemed successful or unsuccessful depending on the extent to which participants perceived the programs as sources of information about educational innovations of interest, and the extent to which participants perceived the programs as sources of information about educational innovations of interest, and the extent to which they perceived them as sources of information contributing to the adoption of innovations.

Studies concerned with sources of ideas have been done in other fields, (e.g., Rural Sociology, Industry, Mass Communications, and Medicine) but no serious attempts had been done on this topic in education. Heck (1967) briefly concerned himself with this topic, but it was not the primary emphasis of his study. Short term training programs have been extensively evaluated. The evaluations, however, usually take the form of measuring subject matter acquired at the conference, or assessing participants opinions on the worth of the conference.

The study was a different approach than the typical workshop evaluations, and it was more explicit and concise than Heck (1967) could be in his study. It is the first study, to the writer's knowledge in education to investigate how effective short term programs are as "change mechanisms" in legitimating decisions to adopt innovations.

The conference participants were polled three times. Pre-conference and post-conference inventories were given at the same conference. A follow-up inventory was sent via the mails six months following the conference. Returns numbered 367 for all the conferences polled. The I/D/E/A 1968 conferences yielded 200 useable matched returns, the Uni-
versity of Massachusetts workshop fifty-two, and the 1967 Hawaiian conference 115 of a random sample of 200, for a total N of 367.

The data gathered were independently content analyzed by three raters. Seven hundred thirty-four (734) independent decisions were made by the raters and they disagreed on success or non-success seventeen times. The Kendall test of rater concordance determined that the coefficient of rater concordance was .977.

The data were compared by using percentages, frequency distributions, and Chi-square tests of significance. All the hypotheses were significantly confirmed. It was determined that the expected values based on Heck's (1967) investigations were considerably on the conservative side. This was shown by a significantly higher proportion of the participants perceiving the programs as effective sources of information than was hypothesized, even though the highest number of participants perceiving the programs was less than half the number polled.

The procedures and methods used in this investigation were quite valid. Some problems were encountered, but they were limitations inherent in most of educational research. All the limitations inherent in the use of questionnaires such as ambiguous questions, unreturned or incomplete questionnaires, and fidelity of information provided by the respondees, may distort the results of the study.

Second, hypotheses five and six needed qualification before analysis could be made. A way should be found for future inquiries in this area to be more specific in linking innovations perceived by participants and topics covered at the conferences.

Further limitations included; resistance to change was not mea-
sured, the quality of innovations perceived was not controlled, and the number of people effected by adoption was not considered as coming under the purview of the investigation.

Discussion and Conclusions of Findings

Results of this investigation and their implications are considered in this section. Because the hypotheses can be paired in regard to their emphases, this section will be divided into a discussion of hypotheses one and two, hypotheses three and four, hypotheses five and six, hypotheses seven and eight, and a concluding section on other analyses. Conclusions made possible by the findings will be included in each of the discussions.

Discussion of Hypotheses One and Two

Hypothesis one was tested to determine the extent to which participants independently perceived the programs as sources of information about educational innovations of interest. Test results showed that significantly more participants perceived the programs as sources of information than was hypothesized (p < .0005). Twenty-nine percent recognized the programs as sources of information, significantly confirming hypothesis one. The only possible conclusions that can be drawn is that the figures derived by Heck (1967) in his study of innovation in Ohio were quite conservative in forecasting the impact of outside agencies as sources of information about educational innovations. Short term training programs are considerably more effective in making people aware of new developments in education than earlier estimates based on
Heck's findings indicated. The people responsible for conducting these programs must, in light of this finding, make a value decision on what constitutes success for their programs. They must decide whether twenty-nine percent of the participants perceiving the programs as sources of information, although significantly more than the limits set in this study, is a high enough percent to justify their use as a vehicle for bringing about change. This investigator feels that the figure is high enough to warrant their use as a vehicle for change.

Hypothesis two was tested to determine the extent to which participants perceived the programs as sources of information contributing to the adoption of innovations. Results of the Chi-square test of significance confirmed that significantly more than one participant in twenty recognized the programs as sources of information contributing to the adoption of innovations (p < .25). Forty participants, eleven percent of the sample, were judged as successfully recognizing the programs as legitimators of decisions to adopt innovations.

It was concluded that short term training programs concerned with educational innovations have the potential to significantly effect educational practice. They are considerably more effective than Heck's (1967) figures would indicate, and with some alteration could become more effective. The findings of Ryan and Gross (97) and Katz (44) were substantiated. The programs were considerably more effective in making people aware of new ideas, than they were an influence in legitimating decisions to adopt. The diffusion of awareness, and the diffusion of adoption are indeed separate processes. The programs could be considered one source of information, and certainly these findings show
that more than one is needed in legitimating decisions to adopt innovations.

To sum, it was found that significantly more participants than hypothesized perceived the programs as sources of information about innovations of interest, and as sources of information contributing to the adoption of innovations. It was also found that the programs were more effective as sources of awareness for participants than they were as sources of information legitimating decisions to adopt innovations.

Discussion of Hypotheses Three and Four

Hypothesis three consisted of two parts and was designed to determine if the mode of support for conference attendance was a factor in regard to the extent to which participants perceived the programs as sources of information about educational innovations of interest. The returns for the University of Massachusetts workshop were compared to the returns of the I/D/E/A 1968 conferences. It was hypothesized that a minimum of one participant in ten in both categories would perceive the programs as sources of information about educational innovations of interest. Both sections of hypothesis three were significantly confirmed (p < .0005). Forty percent of the University of Massachusetts participants polled recognized the program as a source of information about innovations of interest, thirty-two percent of the I/D/E/A participants did so. It was concluded that mode of support for conference attendance was not a factor in determining success or non-success of the conferences in regard to their being identified as sources of information about educational innovations of interest.
A higher percentage of those who paid their own fees (40%) recognized the programs as sources of information than those who received stipends (32%). However, the low N of the University of Massachusetts workshop, and the significant confirmation of both parts of the hypothesis by both groups precludes any definite conclusions. It appears that those who paid their own fees recognize the programs to a greater extent than those whose fees were paid.

Hypothesis four was a two part analysis to determine if the mode of support for conference attendance was a factor in regard to the extent to which participants perceived the programs as sources of information contributing to the adoption of innovations. It was hypothesized that a minimum of one participant in twenty in both groups would perceive the programs as sources of information. As in the testing of hypothesis three, the University of Massachusetts returns were compared to the 1968 I/D/E/A returns. Both groups when tested, significantly confirmed hypothesis four. Twenty-three percent of the University of Massachusetts participants perceived the program as a source of information contributing to the adoption of innovations. This figure was significantly more than the minimum standards set in the hypothesis (p < .0005). Eight percent of the 1968 I/D/E/A participants perceived the programs as sources of information contributing to the adoption of innovations. This figure was significantly greater than the standards for success established by the hypothesis (p < .05).

It was concluded that the mode of support for program attendance was not a factor in determining success or non-success in regard to the programs being identified as sources of information contributing to the
adoption of innovations. It is apparent that a greater proportion of the University of Massachusetts participants, who responded, (paid fees to attend) perceived the programs as a source of information, than did the I/D/E/A participants, (were paid stipends to attend). Both groups confirmed the hypothesis significantly, even though the University of Massachusetts group did so at a much higher level of probability than the I/D/E/A participants. The low N of the University of Massachusetts workshop does not allow very definitive statements to be made, however, it appears that a greater proportion of people who paid fees to attend, perceive the programs as a legitimatator of decisions to adopt than those who were paid stipends to do so.

Discussion of Hypotheses Five and Six

Hypothesis five was tested to determine the relationship between innovations of interest to conference participants and the subject matter of topics covered at the conferences. As mentioned before the topics covered at the conferences included such a wide variety of subject matter that the testing of hypothesis was made possible by qualifying the definition of innovations pertaining to conference topics. Only those returns recognizing the conference as a source of information were deemed pertinent. It was hypothesized that a minimum of one time in ten the innovations perceived as being of interest to conference participants would pertain to topics covered at the conferences. This hypothesis was significantly confirmed \( (p < .0005) \). Twenty-nine percent of the innovations perceived as of interest to participants, pertained to conference topics. It was concluded that significantly more than one time in
ten the innovations of interest pertained to topics covered at the confer-
ences. Also, it was shown that short term training programs are
quite effective in making practitioners aware of new developments in
their field. As has been proven by this and all previous hypotheses
it is reasonable to conclude that these programs meet their objectives
quite satisfactorily, and this study substantiates their continued use.

Hypothesis six was tested to determine the relationship between
topics covered at the conferences, and innovations perceived as adopted
by participants. The same qualification of definition used in testing
hypothesis five was necessary here. It was hypothesized that a minimum
of one time in twenty innovations perceived by participants as having
been adopted would pertain to conference topics. Hypothesis six was
significantly confirmed (p < .025), when the Chi-square test was used
to detect any differences between hypothetical and observed values.
Eleven percent of the innovations perceived as being adopted by confer-
ence participants pertained to conference topics. It was, therefore,
concluded that the conferences were significantly more effective as sour-
ces of information about innovations that were ultimately adopted by the
participants than the lower limit of the hypothesis. It was proven
again in this hypothesis, which has been proven in testing, all the
other hypotheses, that the programs evaluated are recognized to a far
greater extent as a source of information, than was anticipated by using
Heck's figures as original guidelines. The effectiveness of short
term training programs has been substantiated, and merits them being the
most frequently utilized vehicle for in-service education.
Discussion of Hypotheses Seven and Eight

Hypothesis seven was tested to determine the relationship between the participants who stated that the conference heightened their aspirations to innovate, and their perceptions of the conference as a source of information about educational innovations of interest. It was hypothesized that a minimum of one participant in ten who indicated heightened aspirations to innovate after the conference would perceive the conferences as sources of information about educational innovations of interest. The Chi-square statistical test significantly confirmed this hypothesis (p < .0005). Thirty-one percent of those indicating heightened aspirations to innovate, recognized the programs as sources of information about educational innovations of interest. When these figures were compared with participants who did not indicate heightened aspirations to innovate, they were found to be almost identical. It could be concluded, in light of these findings, that; (1) the programs were significantly more effective as sources of information about innovations of interest for those who credited the conferences with heightening their aspirations to innovate than the lower limit of the hypothesis anticipated; and (2) there was no difference in the degree to which the conferences were identified as sources of information between those indicating heightened aspirations, and those not doing so. It is evident that a participant's perceptual assessment of the worth of the conference upon its completion, has no bearing on the degree to which it is identified as a source of information six months after its completion.

Hypothesis eight was tested to determine the relationship between the participants who stated that the conference heightened their aspir-
ations to innovate and their perceptions of the conference as a source of information contributing to the adoption of innovations. Hypothesis eight proposed that a minimum of one participant in twenty who indicated heightened aspirations to innovate would perceive the programs as sources of information contributing to the adoption of innovations. The data gathered significantly confirmed this hypothesis (p < .005).

Ten percent of those indicating heightened aspirations perceived the programs as an influence legitimating decisions to adopt innovations. It was also found that ten percent of those not indicating heightened aspirations, identified the conferences as a legitimating influence. It was concluded that significantly more people who credited the conference with heightening their aspirations to innovate perceived them as a source of information contributing to the adoption of innovations than the lower limit of the hypothesis anticipated. Also, it was determined that their degree of success was not at all different from those participants who did not cite heightened aspirations to innovate.

The participants who indicated on a post conference inventory that the conference heightened their aspirations to innovate did not differ in the degree to which they perceived the conferences as sources of information from either the total population polled or those not crediting the conference with heightening their aspirations. This finding has great ramifications for those who would base a conference evaluation upon inventories filled out at the end of a conference. Any opinionnaire administered on the last day of a conference, and that attempts to assess the worth of the program by polling participants' reactions to the program's merit is highly questionable in light of this finding.
Many workshop evaluations take this form, and their results should be considered highly suspect.

Each conference was analyzed independently to determine if any separate conference failed to significantly confirm hypotheses seven or eight. All the conferences taken by themselves significantly confirmed hypothesis seven. The returns on the Amherst conference were considerably below thirty in this category so no inferences could be drawn on the Chi-square values derived. The Chi-square test with a N considerably less than thirty is highly unreliable, and values derived are questionable.

The Mills College, Davidson College and Southern Utah conferences yielded non-significant results in regard to hypothesis eight. In short, they did not significantly differ in the proportion of the group perceiving the programs as sources of information than was hypothesized. The Amherst conference was not tested because of the above mentioned limitation, and the University of Massachusetts workshop significantly confirmed hypothesis eight \( (p < .0005) \).

Because of the lack of complete data definitive statements would be presumptuous, but it would appear that there were no differences in the program's ability to make participants aware, but that the University of Massachusetts workshop tended to legitimate decisions to adopt innovations to a greater degree than the I/D/E/A conferences.

Secondary Analyses

The data were also analyzed to yield other useful conclusions. The participants were categorized on the type of position they held in
the educational community, and on whether they had paid fees to attend or not. The analysis determined the extent to which each category identified the programs as sources of information about educational innovations of interest, extent to which they identified the programs as sources of information contributing to the adoption of innovations. It was hoped that by categorizing in this way the Brickell thesis, that administrators are the primary agent for change, could be tested.

Because the vast majority of the participants were administrators, no definitive findings could emerge in regard to the Brickell thesis. However, the analysis did yield interesting findings. There were no differences between roles for those paying their own fees with regard to the degree to which they identified the conferences as sources of information about educational innovations of interest.

There were differences between two role categories for those who were paid stipends to attend with regard to the degree to which they identified the programs as sources of information about innovations of interest. The differences within each role category were detected by using the Chi-square test of significance. Of Principals who received stipends, significantly more of them did not perceive the programs as sources of information than did (p < .06). Of Assistant Superintendents who received stipends significantly more of them also did not perceive the programs as sources of information than did (p = .10). There were no differences for the roles of superintendent, department head, or teacher.

There were no differences between roles for those paying their own fees with regard to the degree to which they identified the conferences
as sources of information contributing to the adoption of innovations. There were, however, differences within three role categories for those participants paid stipends to attend. Significantly more of the superintendents ($p < .005$), assistant superintendents ($p < .025$), and principals ($p < .0005$), did not perceive the programs as sources of information contributing to the adoption of innovations than did. All other categories yielded non-significant differences.

No comparisons could be made between administrators and non-administrators, but some interesting conclusions could be drawn from the data. Taken as a group, significantly more principals did not perceive the programs than did. The same was true for assistant superintendents, although their performance was not at such low levels as the principals. It was concluded that the data casts doubt on the change role of the administrator, at least on the local building level. Other conferences should be conducted where the majority of the participants are master or influential teachers, and compare their degree of success with the administrators.

The participants were also categorized according to sex. They were then analyzed as to the degree to which they identified the programs as sources of information about innovations, and the degree to which they identified them as sources contributing to the adoption of innovations.

Significantly more women perceived the programs as a source of information about innovations of interest than did the men ($p < .025$). There were no differences between the groups as to the degree to which they perceived the programs as a source of information contributing to the adoption of innovations.
The number of women in the group was forty-four, the majority of whom were members of religious orders. It is apparent that the conference experience had a greater impact on the women than on the men. Future conferences should include more women as they are more positively affected by conference experiences than men.

A final analysis consisted of an accounting of the number and type of information sources listed by participants. For the question dealing with original awareness, participants listed a median of two sources, and an impersonal means of communication headed the list (professional literature). For the question dealing with legitimation of the decision to adopt, participants listed a median of one information source, and a personal means of communication was far and away the most frequently cited source (consultants).

This finding substantiates the results discovered by Ryan and Gross (1950), that in general mass media serve to inform, and personal contacts are used to legitimate decisions to adopt. It is interesting to also note that the conferences being studied ranked second on the list of awareness sources, and fifth on the list of legitimating influences. It is apparent because of this finding, and also the findings of hypotheses one and two, that the programs were very much more effective in making participants aware of new ideas than they were in convincing participants to adopt these new ideas.

Recommendations

In light of the findings and conclusions generated by this investigation, the recommendations listed in the following section should be
investigated and resolved.

It is apparent that the use of short term training programs as vehicles for change are significantly more effective than figures that existed prior to this study indicated. Thus, it is recommended that their use in such a capacity be continued, and increased if possible. Efforts should be made, however, to increase the number of personal, legitimating, contacts made by participants while at the conference. That is, the conferences should be designed so that they are multi-sources of information rather than one source.

A longitudinal follow-up study of the groups polled in this investigation should be undertaken. Results gained in this endeavor could be compared with the results of the present investigation, and possible hypotheses about resistance to change, and effects of the conference experience over time, could be generated. Certainly resistance to change is one of the prime areas to be researched, and this study provides baseline data for further inquiry into this area.

The conference should be conducted once just for teachers. This would allow comparisons to the present investigation to be made, and the efficacy of the Brickell thesis tested. The role of the administrator as an agent for change, and the degree of his effectiveness in that role should be resolved.

Inquiry should be undertaken to try to improve the quality of the innovations adopted by participants. One interesting question raised by this investigation is whether the quantity of innovating occurring would drop, if some form of quality control was encouraged for use by the participants.
Further studies should, of course, make more concerted efforts to increase the proportion of the participants included in the sample. Many more definitive statements about differences between groups based on mode of support could have been made if the sample was larger. This variable of mode of support should be further illuminated.

A control group should be incorporated in further studies. The use of a non-treated group for purposes of analysis, highlights to a greater degree, any differences created by the treatment (conference experience). It also is a far stronger experimental design model, which lends itself to more discriminating and sophisticated statistical analyses.

A final recommendation generated by this study is that short term training programs include in their design a system whereby the participant is not left to his own designs when he returns to his position in the field. In short, efforts should be made to make the conference a multi-source of information, rather than a single source, as this investigation has proven it to be.

Further efforts in this regard have been made. The principal investigator and four of his colleagues have proposed a program of this sort for use by the Kettering Foundation in its summer programs for 1969. Briefly, the model would provide "facilitators" at the conference who would provide information on the implementation of innovations made aware to participants by the programs. The participants would be followed up after the conference on numerous occasions in order to reinforce their willingness to innovate. It is hypothesized that a greater proportion of the participants will recognize the programs as legitimators of decisions to adopt than was found under the present system.
The recommendations proposed here would greatly add to what is known with regard to change in public education, and greatly enhance educational practice for the future. This study is hopefully, just a first step in a long series of investigations that will further illuminate this crucial area for education.
APPENDIX A

Conference Survey Inventory: Pre Conference

Name: ___________________________ Date: __________________

Home Address: ___________________________

Title of Position: ___________________________

Employer: ___________________________

1. Please identify by name any practices, products, and ideas that YOU initiated, introduced and have adopted in your work during the past year. By adopted, it is now a part of your work.

2. Using your pre-conference literature and communiques as a reference:
   a. what do you expect will transpire during the next week?
   b. what do you hope to derive from the assemblage?

(use other side of form as needed)
APPENDIX B

Conference Survey Inventory: Post Conference

Name:_________________________________________ Date:_____________________

Home Address:________________________________________

Title of Position:________________________________________

Employer:________________________________________

1. Identify planned program events that proved to be particularly fruitful for you.

2. Identify other occurrences during the week that proved to be particularly fruitful to you.

3. Briefly describe ways in which the conference influenced your behavior.

(use other side of form as needed)
Dear Colleague:

I am most interested in obtaining certain information from you about educational innovations. I call upon you specifically because you have been identified as an innovative educator strategically situated to offer the information sought. If you would respond to the following questions on the back side of this letter and then return it to me at the above address, I shall be eternally indebted to you:

1. Which practices, products and ideas have you initiated and adopted in your work during the past six months or so? Merely mention them by name.

2. How did you initially find out about the things that you ultimately adopted? Source identification is most important.

3. Did you see any other resources in the process of translating your awareness into practice? Again, source identification is of primary importance.

Your information will contribute significantly toward the evolution of an important inter-agency applied educational research undertaking.

Most cordially,
APPENDIX D

Schedules and Presentations of the National Seminars on Innovations
July 2-23, 1967
Honolulu, Hawaii

MONDAY

7:30 Opening Session Orientation
Presiding: Dr. Herbert Wey, Director of the Seminars

7:40 Dr. Arthur Harris, Retired Associate Commissioner, U. S. Office of Education
"Opening Remarks and Introduction"

8:00 The Honorable Patsy T. Mink, Congresswoman from Hawaii
(1) Welcome to Hawaii
(2) "National Objectives for Education"

8:30 Overview of Conference
Mr. Charles F. Kettering II, Trustee, Charles F. Kettering Foundation
Dr. J. Graham Sullivan, Deputy Commissioner of Education, U. S. Office of Education

9:20 General Session I - Needs of Modern Youth
Presiding: Mr. Charles Kettering II

9:30 Dr. Carl Rogers, Resident Fellow, Western Behavioral Science Institute
"The Needs of Modern Youth and Their Influence on Education"

10:00 Small group discussions

11:00 Youth Panel Interrogation Session with Dr. Rogers
"Do Youth Perceptions Match Those of Educators?"

1:15 General Session II - Innovation
Presiding: Mr. Charles Kettering II

1:20 Dr. J. Lloyd Trump, Associate Secretary, National Associa-
tion of Secondary School Principals
"Are Today's Educational Innovations Worthwhile?"

2:20 Small group discussions
3:30 Interrogation Session with Dr. Trump
7:00 General Session III - Multi-Media
7:10 Dr. Walter Wittich, Audio-Visual Director, University of Hawaii
"Demonstration of New Media Technology"

TUESDAY

8:00 General Session IV - National Thrust
Presiding: Mr. Ralph Beckes, Director, Field Services for PACE
8:10 Dr. J. Graham Sullivan, Deputy Commissioner of Education, U. S. Office of Education
"National Stratagem for Innovation"
9:10 Interrogation Session with Dr. Sullivan
10:00 PACE Program Development Session
I/D/E/A Fellows Innovation Session
1:15 General Session V - Educational Change
Dr. Norman D. Kurland, Director, The Center on Innovation, The University of the State of New York
"Strategies of Change"
2:00 Reaction Panel
3:00 Small Group Discussions
4:00 Interrogation Session with Dr. Kurland

WEDNESDAY

7:30 General Session VI - New Roles
Dr. J. Lloyd Trump, Associate Secretary, National Association of Secondary School Principals
"Changed Roles for Teachers and Principals that Today's Educational Innovations Require"

8:30 Small Group Discussions
9:30 Interrogation Session with Dr. Trump
10:00 General Session VII - The Humanities
Dr. Harry L. Levy, Vice-Chancellor, The City University of New York
"The Humanities in Transition"
11:00 Small Group Discussions
11:30 Interrogation Session with Dr. Levy
1:00 Work Session in Technology:
   - Computer Assisted Instruction (RCA) (IBM)
   - 8mm Cartridge Loading Projector (Fairchild)
   - Video Tape Recorders (Ampex)
   - Talking Typewriter (Responsive Environment Corporation)
   - Micro-Transparencies (National Cash Register)
3:00 Title III Project Presentations
"The Real World of Innovation"
Conference with Dr. Trump

THURSDAY

7:30 General Session VIII - Dissemination
Presiding: Mr. Norman E. Hearn, Assistant Director, PACE, U. S. Office of Education
Dr. Eugene Howard, Director, Innovation Dissemination, I/D/E/A
"Innovation Dissemination"
9:00 Small Group Task Sessions
Task: "Suggestions for Improvement of Dissemination of Innovation"
10:20 Interrogation Session with Dr. Howard

10:45 General Session IX - Learning
Presiding: Dr. B. Frank Brown, Director, Information and Services, I/D/E/A

Dr. Caleb Gattegno, Director, Schools for the Future

"The Subordination of Teaching to Learning"

1:00 Same schedule as Wednesday afternoon

FRIDAY

7:30 General Session X - Learning (continued)
Presiding: Beatrice A. Ward, Program Executive, Project EDINN, Monterey, California

Panel Confrontation: "Utilizing New Media" - Dr. Gattegno

8:30 General Session XI - Educational Technology

8:40 Dr. Richard Bell, Corporate Education Counsel, Ampex Corporation

"ITV: The Logistics of Learning"

9:05 Mr. Mel Waterbor, Marketing Manager, Fairchild Camera and Instrument Corporation

"Trends in Design and Application"

9:35 Mr. Richard Kobler, Group Manager, Education and Audio-Visual

Dr. John H. Martin, Senior Vice-President, Responsive Environment Corporation

"Humanistic Technology"

10:00 Interrogation Session with Presenters

1:00 Same schedule as Wednesday afternoon

SATURDAY

7:30 General Session XII - Educational Improvement

Dr. Egon G. Cuba, Director, The National Institute for the Study of Educational Change
"The Basis of Educational Improvement"

8:20 Evaluation Workshop
Dr. Daniel L. Stufflebeam, Director, The Evaluation Center, The Ohio State University

1:00 General Session XIII - Curriculum Reform
Dr. Jerrold R. Zacharias, Department of Physics, Massachusetts Institute of Technology
"The War on Boredom"

2:30 Interrogation Session with Dr. Zacharias

3:30 General Session XIV - Reconstruction
Dr. Donald N. Bigelow, Director, Educational Personnel Training, U. S. Office of Education
"The Reconstruction of American Education"

4:15 Small Group Task Sessions
Task: "Listing of New Areas of Development for Consideration by I/D/E/A and the U.S.O.E.

7:45 General Session XV - Social Change
Dr. James Farmer, Professor of Social Welfare, Lincoln University
"Community Participation: Its Role in Educating Our Children"

8:35 Interrogation Session with Dr. Farmer

SUNDAY

6:00 pm Leave for home

Note: Many informal meetings occurred. Any meetings of this type and any social functions, and there were many, are not listed in this schedule.
APPENDIX E

Schedule for I/D/E/A Summer Institute
July 7-13, 1968

SUNDAY

7:00 pm Dinner

Keynote Address: Dr. B. Frank Brown, Director, Informational Services, I/D/E/A Inc.

"Individuality in Learning"

MONDAY

8:15 Sir Percy Lord, Chief Education Officer, County of Lancashire, England

"Education and the Individual"

10:45 Group Discussions

1:00 Dr. Caleb Gattegno, Director, Schools for the Future

"On Some Important Characteristics of Learning and Their Role in Modern Teaching"

3:30 Group Discussions

7:30 Professor John E. Ratte, Associate Professor of History, Amherst College

"Problems of an Inquiry Course"

10:00 Group Discussions

TUESDAY

8:15 Mr. Jesse Arnell, Office of the Executive Director, I/D/E/A Inc.

"Individuality and the Black Student"
10:45 Group Discussions

1:00 Dr. Samuel G. Sava, Executive Director, I/D/E/A Inc.  
"The Role of I/D/E/A in Education"

7:30 Mr. Alvin Toffler, Professor, New School for Social Research  
"The Individual and the Future"

10:00 Group Discussions

WEDNESDAY

8:15 Dr. Gordon Cawelti, Executive Secretary, North Central Association of Colleges and Secondary Schools  
"The Efficacy of Innovation"

10:45 Group Discussions

1:00 Afternoon Free

THURSDAY

8:15 Dr. John Bahner, Director, Innovative Programs, I/D/E/A Inc.  
"Individualizing Instruction Using the Non-graded Curriculum"

10:45 Group Discussions

1:30 Mr. Charles F. Kettering II, President, Charles F. Kettering Foundation  
"Human Relations in Learning"

7:30 Dr. Gere L. Schwilck, Vice President, The Danforth Foundation  
"Technology and the Individual"

10:00 Group Discussions

FRIDAY

8:15 Morning Free
1:30  All Fellows - Workshop
 "Workshop on Individuality in Learning"

7:30  Dr. Arthur W. Foshay, Associate Dean, Teachers College, Columbia University
 "Individualized Learning"

10:00  Group Discussions

SUNDAY

8:15  Breakfast and Depart for Home
APPENDIX F

Schedule and Presentations of the University of Massachusetts Workshop on Flexible Scheduling
July 8-11, 1968

MONDAY

8:00  Registration and Breakfast
10:00  Welcome
      Dr. Oswald Tippo, Provost
10:15  "Students as Teachers"
      Dwight W. Allen
10:45  "New Bottles for New Wine"
      Allan Glatthorn
1:15   "The Decisions that Teachers Make"
      Madeline Hunter
1:45   "Traditional Assignment Programs"
      G. Ernest Anderson
2:15   "Evaluation"
      Robert E. Kessler
3:15   "Evaluation"
      Arthur B. Coombs

TUESDAY

9:00   "Slaughter of the Grass Spiders and What Can Be Done"
      Lloyd Kline
10:15  "Counseling and Human Relations in Flexible Scheduling"
      Allen Ivey
11:00  Questions and Answers
       Arthur Coombs, Robert Kessler, Allen Ivey, Lloyd Kline

1:15   "Flexible Scheduling: What It Is - What It Isn't - What It Can Be"
       Robert Kessler

1:45   "The Uses of Large Group Instruction in Flexible Scheduling"
       Arthur Coombs

2:45   "Advanced Uses of Computers in Education"
       William Bush

3:15   "Technology of School Scheduling"
       Arthur Coombs and Robert Kessler

3:45   Small Group Discussions

WEDNESDAY

9:00   "Individuals and Systems"
       Larry Watts

9:30   "Change Agents and Educational Innovations"
       Arthur W. Eve

10:30  "School Scheduling and Educational Objectives"
       Robert V. Oakford

1:15   "Instructional System Revision"
       Larry Watts

1:45   "The Unstructured Small Group"
       Dwight W. Allen

2:45   Small Group Options (Films and Computer Terminal)

THURSDAY

9:00   "Diffusion and Innovation"
William C. Wolf, Jr.

9:30  "The Resource Center of a Flexibly Scheduled High School"
      James Cooper

10:30 "The Flexibly Scheduled Teacher"
       Dorothy Allen

11:00 "Performance Curriculum in Flexible Scheduling"
       Ray A. Johnson

1:15  "The Systems Approach to Change"
      James Smith

2:00  "Credentialism"
      Dwight W. Allen

3:00  Small Group Options

FRIDAY

9:00  "Physical Design of Schools"
      Neal Mitchell

10:15 "Instructional Systems for Flexible Scheduling"
       Ray A. Johnson

11:00 "Teachers and Their Staff"
       Dwight W. Allen

11:30 Adjournment
PARTICIPANTS BY CONFERENCE
WHO INDICATED_HEIGHTENED ASPIRATIONS TO INNOVATE
AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION
ABOUT INNOVATIONS OF INTEREST

Mills College

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
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<tbody>
<tr>
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<td>N = 4</td>
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<tr>
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<td>N = 33</td>
<td>N = 4</td>
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<tr>
<td>Sub Total</td>
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\[ x^2 = 9.80; \text{df} = 1; \ p < .005 \]

Davidson College

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<tr>
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<tr>
<td>Do Not Perceive the Programs</td>
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\[ x^2 = 12.80; \text{df} = 1; \ p < .0005 \]
College of Southern Utah

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<tbody>
<tr>
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<tr>
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\[ X^2 = 12.25; \text{df} = 1; \ p < .0005 \]

Amherst College

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\[ X^2 = 8.33; \text{df} = 1; \ p < .005 \]
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<th>Conference Did Not Heighten Aspirations</th>
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<tr>
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</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 17</td>
<td>N = 15</td>
</tr>
<tr>
<td>Sub Total</td>
<td>N = 28</td>
<td>N = 24</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>N = 52</td>
</tr>
</tbody>
</table>

$x^2 = 21.33; \ df = 1; \ p < .0005$
PARTICIPANTS BY CONFERENCE WHO INDICATED HEIGHTENED ASPIRATIONS TO INNOVATE AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION CONTRIBUTING TO THE ADOPTION OF INNOVATIONS

Mills College

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Perceive the Programs</td>
<td>N = 2</td>
<td>N = 0</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 43</td>
<td>N = 8</td>
</tr>
<tr>
<td>Sub Total</td>
<td>N = 45</td>
<td>N = 8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>N = 53</td>
</tr>
</tbody>
</table>

$X^2 = \text{N.S.}$

Davidson College

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Perceive the Programs</td>
<td>N = 3</td>
<td>N = 2</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 44</td>
<td>N = 8</td>
</tr>
<tr>
<td>Sub Total</td>
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<td>N = 10</td>
</tr>
<tr>
<td>Total</td>
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<td>N = 57</td>
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</table>

$X^2 = \text{N.S.}$
College of Southern Utah

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Perceive the Programs</td>
<td>N = 4</td>
<td>N = 1</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 29</td>
<td>N = 10</td>
</tr>
<tr>
<td>Sub Total</td>
<td>N = 33</td>
<td>N = 11</td>
</tr>
<tr>
<td>Total</td>
<td></td>
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</table>

$X^2 = N.S.$

Amherst College

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Perceive the Programs</td>
<td>N = 1</td>
<td>N = 2</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 22</td>
<td>N = 19</td>
</tr>
<tr>
<td>Sub Total</td>
<td>N = 23</td>
<td>N = 21</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>N = 44</td>
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</tbody>
</table>
University of Massachusetts

<table>
<thead>
<tr>
<th>Perception of the Programs</th>
<th>Conference Heightened Aspirations</th>
<th>Conference Did Not Heighten Aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Perceive the Programs</td>
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<td>N = 3</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>N = 20</td>
<td>N = 21</td>
</tr>
<tr>
<td>Sub Total</td>
<td>N = 28</td>
<td>N = 24</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>N = 52</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 18.00; \text{df} = 1; p < .0005 \]
PARTICIPANTS BY ROLE
WHO PAID STIPENDS TO ATTEND AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION ABOUT INNOVATIONS OF INTEREST

<table>
<thead>
<tr>
<th>Participants by Role</th>
<th>Perceive the Programs</th>
<th>Do Not Perceive the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendents</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Assistant Superintendents</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Principals</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Department Heads</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Teachers</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Sub Total</td>
<td>21</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>

\[ \chi^2 = \text{N.S.} \]

PARTICIPANTS BY ROLE
WHO PAID STIPENDS TO ATTEND AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION CONTRIBUTING TO THE ADOPTION OF INNOVATIONS

<table>
<thead>
<tr>
<th>Participants by Role</th>
<th>Perceive the Programs</th>
<th>Do Not Perceive the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendents</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Assistant Superintendents</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Principals</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Department Heads</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Teachers</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sub Total</td>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>

\[ \chi^2 = \text{N.S.} \]
Participants by Role
Who were paid stipends to attend and their perceptions of the programs as sources of information about innovations of interest

<table>
<thead>
<tr>
<th>Participants by Role</th>
<th>Perceive the Programs</th>
<th>Do Not Perceive the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendents</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>Assistant Superintendents*</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Principals**</td>
<td>33</td>
<td>74</td>
</tr>
<tr>
<td>Department Heads</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Teachers</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sub Total</td>
<td>62</td>
<td>138</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>200</td>
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</tbody>
</table>

* p = .10
** p < .06

Participants by Role
Who were paid stipends to attend and their perceptions of the programs as sources of information contributing to the adoption of innovations

<table>
<thead>
<tr>
<th>Participants by Role</th>
<th>Perceive the Programs</th>
<th>Do Not Perceive the Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendents*</td>
<td>6</td>
<td>47</td>
</tr>
<tr>
<td>Assistant Superintendents**</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Principals***</td>
<td>6</td>
<td>101</td>
</tr>
<tr>
<td>Department Heads</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Teachers</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sub Total</td>
<td>16</td>
<td>184</td>
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<tr>
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</table>

* p < .005
** p < .025
*** p < .0005
### PARTICIPANTS BY SEX AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION ABOUT INNOVATIONS OF INTEREST

<table>
<thead>
<tr>
<th>Perceptions of the Programs</th>
<th>Total</th>
<th>Participants by Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men</td>
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<tr>
<td>Perceive the Programs</td>
<td>82</td>
<td>63</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>170</td>
<td>145</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>252</td>
<td>208</td>
</tr>
</tbody>
</table>

### PARTICIPANTS BY SEX AND THEIR PERCEPTIONS OF THE PROGRAMS AS SOURCES OF INFORMATION CONTRIBUTING TO THE ADOPTION OF INNOVATIONS

<table>
<thead>
<tr>
<th>Perceptions of the Programs</th>
<th>Total</th>
<th>Participants by Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>Perceive the Programs</td>
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<td>21</td>
</tr>
<tr>
<td>Do Not Perceive the Programs</td>
<td>224</td>
<td>187</td>
</tr>
<tr>
<td>Sub Total</td>
<td>252</td>
<td>208</td>
</tr>
</tbody>
</table>
### Mentions of Information Sources as Creating Original Awareness

<table>
<thead>
<tr>
<th>Sources</th>
<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Literature</td>
<td>112</td>
</tr>
<tr>
<td>I/D/E/A or UMass Conferences</td>
<td>83</td>
</tr>
<tr>
<td>Visits to Other Schools</td>
<td>70</td>
</tr>
<tr>
<td>Consultants</td>
<td>41</td>
</tr>
<tr>
<td>National Conferences</td>
<td>45</td>
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<tr>
<td>Workshops and Institutes</td>
<td>36</td>
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<tr>
<td>University</td>
<td>29</td>
</tr>
<tr>
<td>Self-generated</td>
<td>28</td>
</tr>
<tr>
<td>Salesmen</td>
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<tr>
<td>ERIC</td>
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</table>

### Mentions of Information Sources Contributing to the Adoption of Innovations

<table>
<thead>
<tr>
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<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultants</td>
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<tr>
<td>Visits to Other Schools</td>
<td>39</td>
</tr>
<tr>
<td>Literature</td>
<td>35</td>
</tr>
<tr>
<td>Self-generated</td>
<td>31</td>
</tr>
<tr>
<td>I/D/E/A or UMass Conferences</td>
<td>26</td>
</tr>
<tr>
<td>University</td>
<td>19</td>
</tr>
<tr>
<td>National Conferences</td>
<td>15</td>
</tr>
<tr>
<td>Salesmen</td>
<td>12</td>
</tr>
<tr>
<td>Workshops and Institutes</td>
<td>9</td>
</tr>
<tr>
<td>ERIC</td>
<td>1</td>
</tr>
</tbody>
</table>
NUMBER OF INFORMATION SOURCES MENTIONED BY PARTICIPANTS AS CREATING AWARENESS OF INNOVATION'S OF INTEREST

<table>
<thead>
<tr>
<th>Number of Sources</th>
<th>Number of Participants</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>1</td>
<td>81</td>
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<tr>
<td>2</td>
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<td>3</td>
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</tr>
<tr>
<td>6</td>
<td>2</td>
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</tbody>
</table>

NUMBER OF INFORMATION SOURCES MENTIONED BY PARTICIPANTS AS CONTRIBUTING TO THE ADOPTION OF INNOVATIONS

<table>
<thead>
<tr>
<th>Number of Sources</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>114</td>
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<td>2</td>
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<td>6</td>
<td>2</td>
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