A REVIEW OF SELECTED RESEARCH RELATED TO THE USE OF TECHNIQUES IN ADULT EDUCATION

by

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B.A., The University of Toronto, 1958

A Thesis Submitted in Partial Fulfilment of
the Requirements for the Degree of
Master of Arts (Adult Education)
in the Faculty
of
Education

We accept this thesis as conforming to the
required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 1966

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ABSTRACT OF THESIS

The purpose of this thesis was to review the existing research on techniques for adult education and to develop a scheme by which such techniques could be classified in a logical construct.

The research reviewed was restricted to that literature pertaining only to educational programmes designed and conducted with adults. The findings of the selected studies on each technique were summarized and the technique was placed in the classification scheme. Many of the existing research studies are not comparable with each other, because of poor research designs and the affect that they were not conceived under the same theoretical framework so that similar variables were not controlled.

Research studies dealing with certain techniques were particularly scarce such as those concerned with information techniques like the lecture, form, panel, debate, symposium and dialogue. The bulk of the research tended to be concerned with techniques involving learner participation, such as group discussion and skill practice. In the case of certain techniques no valid research was found.

In addition to research pertaining to techniques, the literature dealing with the classification of techniques for adult education was also examined and the Newberry system

was adopted as the most valid for purposes of this study. This system of classification produces a two dimensional scale which placed a technique in terms of the degree of learner involvement on the one hand, and ascending measures of concreteness of subject matter on the other. On the basis of the research reviewed, each technique considered has been placed in a cell on the Newberry Scale.

ACKNOWLEDGEMENTS

I would like to thank Dr. Coolie Verner for his help in the preparation of this thesis.

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CHAPTER I

PURPOSE OF THE THESIS

I. INTRODUCTION

The emphasis that our western society has placed on control of the physical environment is perhaps unique in the history of man. It has been said that in the physical sciences knowledge doubles every ten years and 90 per cent of all the scientists who have lived are living now. The radical advances in technology which occur daily and which we accept as a normal part of life imply a need for many social changes which because they are dependent on the attitude and value systems of the human mind do not come about easily. This can be perceived in studies of primitive societies which may have eagerly accepted the technological advances of the west but have not developed the organizational patterns or more basically the philosophy of life which would enable them to develop a technological society of their own.

Thus we live in a society where technological and concommitant social change are part of the environment. Technology appears to forge ahead almost under its own impetus whereas great effort is required to solve some of the social problems created by such change. For instance: medical

science has learned how to save thousands of lives, but man is left with the problem of an ever-growing human population and vast numbers of people in small areas; technology has provided the means for great mobility via the jet, the car and the train but society faces the problem of changing family patterns where relatives are often hundreds of miles apart and institutions have to be evolved to care for the aged, the needy, and the mentally ill; technology advances at such a pace that many jobs are continuously being taken over by machines creating a need for large numbers of people to learn new jobs periodically. If such a society is to remain integrated there must be opportunities for adults to acquire new learning throughout life.

During the life span of the present adult population the formal instructional setting has been perceived primarily as the sole province of the young of the society. The education of adults however, has been recognized increasingly in our modern industrial society as that society has created the need for it.

Philosophically, as a society, we subscribe to the democratic principle which implies that while we can provide the occasion and the opportunities for adult learning it is left to the individual to take advantage of such opportunity voluntarily. This implies also that the actual learning situation will be conducted so as to encourage the learner to

think independently. Thus, the authoritarian and persuasive use of learning situations have no place within the democratic framework.

II. PURPOSE OF THE THESIS

In order to advance any field of knowledge systematically it is necessary to review its research periodically to itemize what is known and to determine where further research is needed. Such a summation and analysis of existing research requires a conceptual framework in order that the known and the unknown components of knowledge in a field can be differentiated recognized and ordered systematically. The purpose of this thesis is to review existing research pertaining to the techniques of adult education and to assess whether the results can be categorized under any conceptual scheme which would be useful to the practising adult educator. This would enable him to select techniques according to his specific goal for learning. Furthermore such an analysis will indicate those areas in which substantive knowledge about techniques is scant or wanting.

III. DEFINITIONS

In analyzing research in adult education it becomes apparent immediately that the terms 'method' and 'technique' are used interchangeably when in fact they describe discrete

processes. For purposes of this analysis, therefore, the precise definitions proposed by Verner (86) are employed. He defines method as:

> ...the relationship established by an institution with a potential body of participants for the purpose of creating an instructional setting for systematic learning among a prescribed but not necessarily fully identified public. (86 p.22)

Technique, in turn, is defined as:

> ...the relationship established by the instructional agent to facilitate learning among a particular and precisely defined body of participants in a specific situation and the material to be learned. (86 p.22)

The terms method and technique will be used in this thesis as defined here except in the review of literature where the terms will be used as the reviewer has used them when discussing each review and according to Verner when discussing the significance of the findings for the present thesis.

Other terminology which will be used in a precise manner in this study will also be defined here.

Devices are distinguished in the Verner terminology from methods and techniques:

> Devices may be defined as the equipment utilized or the conditions established by the instructional agent to extend or increase the effectiveness of the techniques employed in an instructional setting. (86 p.22).

The term agent or educational agent will be used in this thesis to designate the individual who is responsible for structuring the learning situation. The term teacher is

consciously avoided here since it fails to describe the precise nature of the role of the instructional agent in an adult learning situation.

The term learning will be used as defined by Fraser (32)

> Learning is a process whereby correct responses are integrated into a continuously adaptive pattern, and incorrect or badly timed responses are eliminated or readjusted. (32 p.25)

The act of integrating implies that for learning to occur the learner must be actively involved in restructuring concepts, value systems and motor reactions to accommodate new information. This process will require greater or lesser effort on the part of the learner depending on whether the new material is in harmony or conflict with his existing conceptual field and whether he has the intellectual and motor equipment to deal with it.

IV. REVIEW OF THE LITERATURE

Reviews of research on methods and techniques applicable to adult education are a recent phenomenon, the earliest discovered having been written in 1942. The first reviews were published in the fields of psychology and speech. From the mid-fifties on, such reviews were written within the disciplines of social psychology, sociology, speech, education and adult education.

It will be the purpose of this section to consider these reviews of the research in chronological order with the following questions in mind where applicable: how many studies are reported and within what discipline were they carried out? Were the studies in child or adult education? how valid were the research procedures? how was the review organized?

What methods and techniques were studied? was effectiveness judged by attitude change, information gained, skills or some other criteria? is there a classification scheme which would be workable in terms of the learning goal of the agent explicit or implicit in the review?

Two areas in which techniques have been studied will be left out: these are studies relating to techniques under the correspondence method which have been adequately dealt with already by Tucker and Bradt (84) and studies using high school and college youth as subjects since there is much doubt that the findings of such studies can apply unequivocally to adult education. Brunner (20), Dietrick (29) and Verner (87) state their respective reservations on this point as follows:

> It must be pointed out that the methods, techniques and materials of adult education should be developed especially with their use with adults in mind. High school procedures and materials were found inappropriate again and again by both the Army and Navy. (20 p.148)
>
> Not only has most of the research been done in a college situation, but the youthfulness and general grade-orientation of the majority of samples make it difficult to apply the findings that are available to the adult education situation. (29 p.111)

> It is generally assumed that there are no significant differences in the use and effectiveness of methods between adult and pre-adult levels. This assumption itself has not been tested and it discounts any important psycho-social difference that may develop. The acceptance and adoption studies have emphasized the important influence exerted by psychosocial factors and tend to support this reservation.(87 p.266)

In a review of the research Dickens and Heffernan (28) cite the findings of three earlier surveys of experimental research on group discussion. All experimental work within the period of 1934-46 is encompassed within this review. The reviewers discovered that the research had been pursued almost exclusively in the fields of psychology (fiften studies 1924-34, five studies 1934-46) and speech (twenty-three studies 1934-46). The authors note that the psychologists, not being practitioners of discussion tended to set up artificial and unlifelike situations and have concentrated on the effects of discussion while overlooking the process entirely. Researchers in the field of speech on the other hand, set up studies which were not rigorously enough controlled to be scientifically sound. Ninety per cent of the studies in both fields have been carried out with high school or college students as subjects and as a consequence almost the entire bulk of this research is limited in its application to academic situations.

In the opinion of the authors the number one need for research regarding discussion is the development and validation of new experimental tools, the feeling being that

it will be impossible to build good study designs until better measurement techniques have been constructed.

According to this review the most thoroughly covered areas of research in discussion have been the effects of discussion on problem solving, and on attitude change and comparisons between lecture and discussion with regard to the amount of information acquired from each. However no means of classifying techniques according to the goal for learning is offered.

In a 1949 review Keltner (48) asserts that

> All that can be attempted here is a brief running account of typical studies in several areas of research, indicating the type of problem studied and the principal conclusions reached. (48 p.91)

He reports forty-one items, not all of which can be regarded as research studies, incorporating the findings of studies using both pre-adults and adults as subjects. There is no criticism of research procedures. This review seems to be concerned mainly with studies relating to the dynamics of a discussion group and with attitude change and mental skills as products of the discussion group. The research is reported under sections on: 1) group process and effects, 2) the work-group conference, 3) methods in industry, the armed forces and radio, 4) film forums, 5) discussion in the classroom, 6) leadership, 7) bibliographies. No means of classifying techniques according to goal is offered.

In a 1950 review of the research on methods of adult education Sheats and McLaughlin (69) point to the general areas in which research has been carried out. They report sixty-nine studies and reports covering the period from 1945 to 1950, the majority of which have used adults as subjects. New techniques dealt with in this review are role-playing, socio-drama and Phillips 66. This is a useful review in that it has included many significant studies on a variety of techniques. The authors classify the research according to the size of the group with which a method or technique is used.

In an Extension Service circular Crile (25) reviews research on meetings within the Federal Extension service. A variety of techniques used within the meeting method such as demonstration, film-discussion, and discussion are reported. Many of the studies are concerned with participation patterns related to the method and hence are irrelevant to the present review. The chief criterion of the success of the method is whether new practices advocated at meetings were adopted. The review is organized into sections on: 1) adult and youth meetings, 2) agriculture and home economic meetings, 3) agricultural meetings, 4) home economics meetings and 5) 4H club meetings. Hence, the sections concerned with studies of adults can easily be distinguished from sections dealing with children. The review is not primarily concerned with

techniques and no means of classifying them is offered.

Verner in a 1959 review (87) reports the findings of forty-eight studies on exhibits, bulletins and readings, as well as on meetings. According to the typology Verner has since developed the first three categories do not apply to the study of methods and techniques. There is nothing directly applicable to techniques in the review of the research on meetings, however the finding that the educational meeting is a very effective method in rural adult education indicates that research on techniques under this method should prove useful. Two further sections of the report deal with evaluative studies and studies of factors influencing method. The former mentions lecture and correspondence techniques and the latter deals with findings of studies regarding the social group with which a method is likely to be effective. Adoption seems to be the measure of effectiveness here.

Brunner (20) devoted two chapters of his book to studies on methods and techniques. The first of these chapters (pp.142-162) deals mainly with research on meetings using adoption as a criterion of effectiveness, but studies dealing with role-playing and with lecture are also mentioned. A total of twelve studies are considered. The second of these chapters (pp.162-176) deals with research on discussion summarizing a total of sixteen studies mainly using adult samples.

Brunner's criticism of studies on discussion is that most have used less than scholastic rigor in seeking to identify the situations in which discussion can be used most appropriately. He mentions that he can find no studies:

> in which the appropriateness of discussion in widely different adult education situations and among people of widely different experiences and abilities was evaluated. (20 p.169)

The review is organized under two major headings, lecture versus discussion and the discussion leader. Under lecture versus discussion Brunner reports research on discussion-decision groups compared with lecture groups and lecture-discussion groups. Some of the studies reported used pre-adults as subjects. Several studies are concerned with the effect of decision-discussion and study discussion on opinion and attitude change. Under the section on leadership Brunner reports studies aimed at uncovering the most effective type of discussion leadership. The Verner conceptual scheme is discussed in this overview.

Dietrick (29) in a review of the literature compares the findings on lecture and discussion. Included in this survey of 185 research reports, are many studies using college students as subjects. Dietrick shares the concern recorded ten years earlier by Dickens and Heffernan (28) that studies should meet certain methodological and measurement standards

before the findings can be considered valid. His comprehensive review gives much food for thought as to the validity and area of applicability of the findings of many studies reviewed. He comments:

> It is important to keep in mind, however, that these inferences assume comparability for the studies from which they are drawn. As we have seen, there is little evidence to warrant such an assumption. Indeed, in view of the general lack of agreement and frequent failure to control a number of variables which may have seriously altered the findings, one must exercise extreme caution in evaluating this divergent body of research. (20 pp.110-111)

He attempts to define the discussion and lecture 'methods' and organizes his review around these definitions, pointing out that there has been little consensus on the discussion process among those who have designed studies on discussion. Question and answer, the quiz session, the lecture and reading quiz, buzz sessions, seminars, group-centred and leader-centred discussion groups, collections of persons who actually work as individuals and the "true" (as defined by Dietrick) discussion 'method' have all been subjected to research under the title of discussion. Dietrick (20) considers two elements necessary for true discussion:"1) the primary exchange is between the students; 2) the most active role played by the instructor is that of provocative moderator." (20 p.91)

However he finds that by selecting studies according to these criteria he would: "exclude numerous studies whose

inferential value lies in their ability to further the integration of otherwise contradictory findings." (20 p.91) Consequently he excludes only those studies dealing with a) buzz groups and b) collections of persons who actually work as individuals.

Regarding the class method and lecture technique he includes all studies which fit this definition:

> About all that can be said is that the experimenters appear to have conceived the lecture to be a more or less continuous oral presentation of information and ideas by the teacher with little or no active participation by the members of the class. (20 pp.91-92)*

Dietrick notes that studies comparing the efficacy of lecture and discussion can be categorized into three major classes of research according to the criterion used to evaluate the study. These are 1) the acquisition of information, 2) the retention of information, and 3) attitudinal change resulting from participation. A sub-criterion of some of the studies on which Dietrick reports findings is the power of the 'method' to develop certain mental abilities in participants. Thus Dietrick has derived a means for categorizing these studies according to the learning goal achieved while noting that present research may not be comparable under any de posto facto classification scheme.

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*Dietrick quotes this passage from T.F. Stovall, "Classroom Methods. 11. lecture vs discussion," 12. Delta Kappan, 39: 255-258, p.255. March, 1955.

Goulette (36) includes a chapter on methods and techniques in his review of the research undertaken in the armed forces on the education of adults. His review is organized under the Verner conceptual scheme which simplifies the location of studies of primary concern for techniques. The fifteen studies on techniques have been carried out under the class method, the major method used by the armed forces. The effectiveness of the technique was often judged by skill acquisition, although information gained and attitude change are also criteria of effectiveness in some studies.

Conclusions

Most studies in adult education and other fields concerned with the learning process, while using the terms, method and technique synonymously, have been primarily designed to study methods. Often the researcher has failed to indicate with any clarity the technique used to facilitate learning within the method. One task of this reviewer, therefore, will be to analyse studies on method to determine if they indicate any findings for techniques, and to examine research specifically on techniques.

As has been observed in the reviews considered here the validity of a great amount of research undertaken to date is questionable due to the number of unconsidered and uncontrolled variables at play in a large number of study designs. A scheme whereby techniques can be classified

according to their inherent characteristics in the learning situation and the goal for learning should give a realistic basis for assessing studies already completed and for planning good designs for studies to be undertaken in the future. It should also provide a basis for deciding which studies are comparable. The need for a conceptual framework within which the research can be integrated is remarked by Dietrick (29):

> The general area lacks a theoretical framework which integrates various research findings, resolves the inconsistencies that exist, and provides a basis for translating what has been found in one situation to other education settings.... Thus, while we have at hand numerous pieces of information suggesting problems explored in the present instance we lack an empirically based frame of reference within which the entire research problem can be formulated. (29 p.111)

V. PLAN OF THE THESIS

Since Verner (85) has offered a conceptual scheme or 'frame of reference' under which Newberry has subsumed a classification scheme for techniques, chapter three will be devoted to an exposition of the Verner definition of adult education and an examination of the Newberry classification scheme in the light of theory and research to see if it can be validated, developed or refuted. If it is tentatively validated or developed by existing research applicable to the theory then chapter four will be devoted to reporting the research on techniques, to state the known effectiveness

of each according to the goal for learning and to place it on the classification scale.

Studies on each technique will be written up under two general headings: Research Design and Findings. Under the former heading a description of the technique as used in the study, the sample, methods of data collection and analysis will be included. The data for all studies dealing with a particular technique will be compiled under the same section both for research design and findings. Under the latter heading findings on the internal process of the technique, the technique's efficiency in achieving the learning goals of information acquisition and comprehension, command of motor skills and mental skills, problem-solving, attitude change and adoption of new practices will be included. Consequently the reader will be able to check comparability of studies for himself. Finally, unless there is only one study on the technique, a description of the technique based on research will be included in a summary along with a sketch of the areas of learning for which it has been shown efficient. An attempt will then be made to point out future needs for research and to place the technique on the Newberry scale.

The plan will be to begin with techniques at the passive symbolic vertex of the scale and move towards intermediatory techniques such as discussion to discussion decision

at the active,concrete vertex. If a study deals with more than one technique it will be placed under the technique it chiefly deals with. Most studies comparing techniques have used one more or less as a standard by which to test the other. For instance many experiments have tested discussion and lecture techniques in the same experiment using lecture as a standard by which to test the value of different kinds of group discussion for achieving different learning goals. These studies will be written up in full under the appropriate section on group discussion. However the findings relevant to the lecture technique will be cited in the section on the lecture. The two exceptions to this practice will be the Liveright (53) and Andrew (3,4) studies. Liveright (53) hypothesized an interrelationship between content and teaching style which has relevance for different areas of the Newberry scale and will be brought in where relevant; Andrew (3,4) tests both lecture and discussion techniques separately with the same experiment and her study will be mentioned in both sections.

Several studies have been located which deal with a conjunction of techniques under a method and as a point of interest these will be included.

Chapter four will be used to summarize the results and to point out future needs for research and theory.

CHAPTER II

DEVELOPING A CLASSIFICATION SCHEME

INTRODUCTION

In order to identify and classify techniques for adult education it is necessary to construct the theoretical framework in which they operate. Such a theoretical framework has been outlined by Verner (86) in his theory of adult education processes. The first step in the construction of such a theoretical framework is the precise identification of adult education itself. This Verner does in his statement:

> Adult education is a relationship established between an educational agent and a learner in which the agent selects, arranges and continuously directs a sequence of progressive tasks that provide systematic experiences to achieve learning for particular participants for whom such participation in such activities is subsidiary and supplemental to their primary functional role in society. (86 p.10)

Within this definition two aspects of process, method and technique, emerge which are in turn defined by Verner in the following manner.*

> Method, then, may be defined as the relationship established by an institution with a potential body of participants for the purpose of creating an instructional setting for systematic learning among a prescribed but not necessarily fully identified public. (86 p.22)

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*These definitions have already been cited in chapter one and are repeated here for purposes of developing the argument.

The methods of adult education describe the ways of organizing people for learning such as a class, a discussion group, a meeting, or correspondence and apprenticeship. Technique is defined as:

> the relationship established by the instructional agent to facilitate learning among a particular and precisely defined body of participants in a specific situation and the material to be learned. (86 p.22)

Techniques, on the other hand, are vehicles through which the agent facilitates learning within the context of the method. Lecture, group discussion, role-playing, panels and forums are techniques under this definition. A variety of techniques may be subsumed under a given method according to the agent's decision as to which will best facilitate the type of learning required. The class method for example, lends itself to the use of the lecture, group discussion and panel techniques,among others. The discussion group method on the other hand lends itself to case study, group discussion and role-playing techniques.

Thus a technique is the element in a learning situation in adult education which allows for continuous restructuring of the process in view of the learner's response and the learning goal.

Since the achievement of learning more efficiently and effectively is the ultimate function of a technique it is necessary to consider learning as defined earlier by

Fraser (32):

> learning is a process whereby correct responses are continually integrated into a continuously adaptive pattern and incorrect or badly timed responses are eliminated or adjusted. (32 p.25)

This would mean that the learner must receive information as to the correct response and perform the activity of integrating it into his present cognitive structure. Thus receiving information and the act of integrating information are dual facets of every learning experience for the learner.

It would appear therefore that each discrete technique must make provision for the acquisition of information and simultaneously assist in the act of integrating the information acquired. The greater the agent's understanding of how information is integrated the better he will be able to continually restructure the learning situation within the technique so that "he selects, arranges and continuously directs the sequence of progressive tasks that provide systematic experiences to achieve learning". (86 p.10) It seems unlikely, however, that each technique would fulfil the criteria of providing information and for the act of integrating it to the same degree. Depending on the learning goal some techniques might place greater emphasis on information and others on integration.

A functional description of learning has been discussed but so far specific learning goals have not been mentioned. Verner (86) discusses three goals of adults in seeking learning experiences: to acquire information, to

acquire a skill, and to apply knowledge.(86 p.56) The present writer would expand these to say: to acquire and comprehend information: to acquire mental and motor skills; and to apply knowledge to solve problems, to change attitudes and to adopt new practices.

A scale for classifying techniques according to the quality of the learning experience would have to provide some sequence for placing techniques according to the criteria of providing for the dissemination of information and the act of integrating it. The Newberry scale is an attempt to provide a means of sequencing techniques according to these criteria and the goal for learning. As such it will be presented as published in Verner (85) along with the rationale supporting it. The present writer will then attempt to analyse and substantiate the scale further since due to Newberry's untimely death he was not able to finish work on this scheme.

The Newberry scale as presented in Verner (85 p.22) and reproduced in Figure I is a two dimensional scale, one dimension of which is concerned with the degree of overt participation of the learner in the learning experience, the hypothesis being that the learner must be ego-involved in the task before he will make the effort to integrate new information and this ego-involvement is more likely to occur with overt participation. The second dimension of the scale is

that of content or information, and the scale progresses from highly symbolic content abstracted from life experience to highly concrete content pertaining to immediate real life experience. Concreteness of subject matter would also appear to facilitate ego-involvement since it is easier for most persons to become involved in something they understand and it is generally easier to understand the concrete than the abstract. The assumption is that as the scale progresses outward from the vertex of highly symbolic content and little overt participation provided for the ego becomes more deeply involved dependent on the dual phenomena of greater concreteness and greater overt participation and thus the participant is more likely to engage in the activity of integrating information. If one of the dimensions of the square remains constant while the other progresses eg. little participation but greater concreteness of content as when a lecture is illustrated by charts or more concrete still by a film the learner is still given a one-sided opportunity to become more ego-involved and consequently to see greater applicability of the information. Abstract principles might be expected to become less abstract in the mind of the learner when there is high participation so that he can relate principles to his own experience and this too is accounted for on the scale. Hence the scale would appear to provide a means for selecting a technique according to the inherent

FIGURE I*

THE NEWBERRY SCALE

A SCALE FOR CLASSIFYING EDUCATIONAL TECHNIQUES ACCORDING TO THE DEGREE OF ABSTRACTION FROM DIRECT EXPERIENCE OF CONTENT AND DEGREE OF OVERT PARTICIPATION OF THE STUDENT IN THE LEARNING EXPERIENCE

	DEGREE OF ABSTRACTION OF CONTENT				
Degree of Participation of the Student in the Learning Experience Permitted, required or Encouraged	1. Abstract	2. Semi-Abstract	3. Somewhat Removed from Direct Experience	4. Direct Experience	5. Concrete Direct Experience
A. Passive: No participation necessary, no provision for any overt student participation	Lecture		Lecture with Visual Aids		Demonstration Film
B. Limited overt participation provided for some	Lecture with question to answer		Lecture forum Panel Dialogue Film forum etc.		
C. Limited Participation provided for all or most students					
D. Full participation provided for all students	(group discussion depending on content)				carrying out an experiment on project under supervision
E. Full participation necessary for all students					group decision for purposes of decision-making

*The Newberry Scale reproduced from Verner (85,22) with slight revisions.

characteristics of the technique.

In terms of the learning goal it would seem logical that direct change in real life situations is more likely to occur with high participation and concrete subject matter whereas greater quantities of information will be assimilated when the stress is on dissemination of information. Hence Verner (85) states:

> the utility of the table is illustrated by the position of such conventional classroom techniques as the lecture, the recitation, and written assignment all of which fall within the most abstract categories and within the three lowest participation categories. From their position in the table it would appear likely that classroom techniques would tend to be less efficient in promoting behavioural changes in life situations than those which are less abstract, and more conducive to participation. (85 p.23)

Consequently it would appear that the Newberry scale offers a means of classifying techniques according to the inherent characteristics of the technique and the learning goal which can be achieved through each.

Verner (85) states that a satisfactory classification scheme should conform to certain criteria:

> (1) it must be applicable to all techniques (2) It must classify techniques according to real differences in the techniques themselves (3) It must be free of value judgments stated or implied (4) The system must have practical applicability to the selection of techniques for use with particular groups, for specific purposes and under given conditions. (85 p.20)

It will be well to see if the scale satisfies these conditions after examining the evidence.

The assumption of the Newberry scale is that ego-involvement of the learner can be achieved through making the content real to his experience and providing opportunities for him to participate in the learning. Once the learner is ego-involved he will actively engage in learning. Are there factors other than concreteness of subject matter and degree of participation provided which influence the degree of ego-involvement?

The personal qualities of both agent and learner would seem to be important in the learning situation as well as the quality of relationship which exists between them. It will be interesting to note in the experiments to be examined whether the agent in his role of continuously structuring the process is more successful as a sympathetic or an unsympathetic figure. It seems logical that the quality of relationship between agent and learner or learners would have to be friendly and sympathetic in order that the learner be free to bring up his real problems with the material in an atmosphere of trust. Also it appears logical that the learner's intelligence, motor and mental skills, value system and attitudes based thereon would affect the learner's ability to become ego-involved in the learning and consequently his engagement in the task. Material which is highly symbolic to some might be a great deal more concrete to others with previous learning in the field; factual material which

threatens the value systems of some might be non-threatening to others and so on. Thus the agent must be able to judge the needs of a particular group and use the technique or techniques in juxtaposition which will provide them with the opportunity to learn. Mental capacity and motor skills may be regarded as fairly static "givens" with any particular learner and learning experiences may be planned around these limitations but there has been some research which suggests past life experiences resulting in values and attitudes may be subjected to 're-education' in the terms of Kurt Lewin and it is in connection with this area that "concrete" and "symbolic" content take on a new meaning. There seems to be evidence that values and attitudes affect the individual's ability to integrate information and that 'social reality' is just as meaningful to the adult as what might be considered the more objective reality of the physical sciences. In fact it would seem that even objective information is influenced by social reality. Consequently it would appear that the agent must consider how to make contents "socially concrete", as well as objectively concrete to the participants and that the Newberry scale must accommodate differing degrees of social concreteness if it is to be useful for learning techniques where the goal is value and attitude change or action dependent on such change.

Asch (5) tested whether the perception of individuals

on matters of fact can be changed by group influences. In a well-designed experiment, he tested the consistency with which one college student continued to assess the length of a line correctly when the remaining six to eight in each group had previously conspired to agree with each other on an incorrect measure for the line. He found that two thirds of the judgements of the experimental subjects were correct and independent of the majority, while the remaining one third were influenced in a pro majority direction. This was significantly more than the control group who wrote their answers and thus were not submitted to group pressures. Asch (5) varied this experiment in a number of ways to study the extent of group pressures on the individual in factual questions and concludes:

> One fact constantly reappears in these observations. As soon as a person is in the midst of a group he is no longer indifferent to it. He may stand in a wholly unequivocal relation to an object when alone, but as soon as the group and its direction are present he ceases to be determined solely by his own coordinates. In some way he refers the group to himself and himself to the group. He might react to the group in many different ways: he might adopt its direction, compromise with it, or oppose it; he might even decide to disregard it.....
>
> One can make a more specific assertion about this responsiveness to the group: if conditions permit the individual moves toward the group. (15 p.483)

He reports an earlier experiment by Sherif* who

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*The material discussed here is from Asch's examination of Sherif's experiment. Muzafer Sherif, "A Study of Some Social Factors in Perception," Archives of Psychology, No. 187, 1935.

sought to investigate the influence of a group on the judgement of an individual when the objective fact was open to interpretation. Sherif used the phenomenon that when a stationary light is observed in a dark room after the first few seconds it appears to move. Sherif discovered that individuals examining this occurrence separately tended to judge the movement around a central tendency and these judgements remained fairly constant on successive days. Also there were consistent differences in judgements of different subjects.

When Sherif placed two or three individuals whose previous judgements were consistent and varied considerably from each other in the same group he found that each person changed his judgements towards a judgement common to all. In following individual sessions, these persons kept the judgements they had formed in the group.

Sperling* in a study to further Sherif's experiment found that when two subjects were put together one of whom had been instructed to give judgements within a certain extreme range, the other was found to move in the direction of these judgements but to a limited extent. No subject

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*This experiment is also discussed as examined in Asch. H.G. Sperling, "An Experimental Study of Some Psychological Factors in Judgment". M.A. Thesis, Graduate Faculty, New School for Social Research, 1946, unpublished.

moved even 50 per cent of the way between her own initial judgement and that of the stooge.

These findings seem to indicate that whenever the observed event is objective or illusory individuals in a group acknowledge the perceptions of others to varying degrees in making their assessment of the situation. Even if their judgement does not change to agree with that of the group, the individual evaluates the judgement of the group and rationalizes his own in comparison with it. In other words reality consists not only in the objective or non-objective fact but in other persons' perception of it. It might be said tentatively on the basis of these two experiments that the less objective the phenomenon the more the perception of others is seen as a factor to be considered.

Consequently the agent must be aware that the perception of the learner is affected by the group perceptions and that, in the act of integrating information the learner is affected by his perception of group perception and this is true to a limited extent with factual material and progressively more so with material open to dispute, that is material relating to attitudes and values. Thus 'social reality' would have to be accounted for in making the learning situation concrete.

The power of group life over individual value systems seems to be demonstrated through other studies

where individuals changed their cognitive structures to conform with that of a group they aspired to join.

Newcomb (64) for instance, studied women college students over their four year period on the Bennington College campus. He discovered that despite the politically conservative backgrounds from which they came, the girls who became active in college life changed their beliefs to the politically liberal views which prevailed among college faculty and the student leaders. Moreover he found that those who never accepted the predominant college philosophy were more strongly tied to their family groups and tended to be outcasts in the college fraternity.

Apparently, even when an individual is compulsorily placed in a group demonstrating strong attitude systems he is influenced to change his attitudes in the direction of those demonstrated by the group. Katz and Lazarsfeld (47) report that the attitudes towards readiness for combat were found to vary among green soldiers according to the divisions to which they were joined.* Forty-five per cent of soldiers in divisions composed completely of "green" soldiers reported readiness to enter battle whereas only 28 per cent of "green" soldiers who were sent as combat

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*This evidence comes from a report by Samuel Stouffer et al. The American Soldier: Studies in Social Psychology in World War II (Vols. I and II), Princeton, N.J.: University Press, 1949.

replacements to veterans divisions so reported. Stouffer argues that the attitudes of the second group were changed by the combat veterans, only 15 per cent of whom stated they were ready for combat.

Although these studies are not concerned with how the agent structures change in an educational setting they demonstrate the influence that group values have over those who are placed in a new situation in which group life reveals strong value systems. It would seem that acceptance in the new group and acceptance of its beliefs and values are concomitant.

Therefore it appears that by simulating the real life context in the midst of which attitudes and values are developed and changed the educational agent may provide a concrete situation where individuals may examine their attitudes in the midst of real life pressures. The difference between the educational and the real life environment is that in the educational setting the agent attempts to organize the discussion so that group members may examine the totality of their concerns about a subject before making the decision to change and encourages an atmosphere of trust and respect and acceptance of difference so that individuals are free to examine all their concerns before making a decision to change. In real life situations the individual may often change solely due to his desire to join or remain in a group and without

systematic examination of the problem.

Kurt Lewin (52) hypothesized that attitude change resulting in new practices to which the individual was previously antagonistic or indifferent could only occur when the individual is involved in restructuring his own beliefs. He states:

> A factor of great importance in bringing about a change in sentiment is the degree to which the individual becomes actively involved in the problem... Lacking this involvement, no objective fact is likely to reach the status of a fact for the individual concerned and therefore influence his social conduct. (52 p.28)

He was particularly interested in new learning which required unlearning of ideas previously held. He considers that the 're-educative process' as he calls it and which he defines as a 'change in culture':

> affects the individual in three ways. It changes his cognitive structure, the way he sees the physical and social worlds, including all his facts, concepts, beliefs and expectations. It modifies his valences and values and these embrace both his attractions and aversions to groups and group standards, his feelings in regard to status differences, and his reaction to sources of approval or disapproval. And it affects motoric action, involving the degree of the individual's control over his physical and social movements. (52 p.24)

He hypothesized that for such individuals to become ego-involved to the point where they actively engaged in restructuring their own cognitive pattern to integrate new learning they must do so in a natural societal setting where they would be presented with the kind of attitudes they meet in daily life and he constructed experiments to test this

hypothesis.

Allport (1) supports Lewin's theories and considers that in order for an individual to engage in an activity to the extent that he desires to change he must be 'ego-involved' in the activity and ego involvement occurs in a setting which is socially real to the individual. He comments on Lewin's studies in the following section:

> As members of this society have shown group decision, open discussion and the retraining of leaders in accordance with democratic standards yield remarkable results. One of Lewin's studies in this connection is especially revealing. People who like a certain food are resistant to pressure put upon them in the form of persuasion and request, but when the individual himself as a member of a group votes, after discussion, to alter his food habits, his eagerness to reach his goal is independent of his personal like or dislike. (1 p.148)

He concludes

> Such findings add up to the simple proposition that people must have a hand in saving themselves; they cannot or will not be saved from the outside. (1 p.148)

It would appear that this 'self-saving' must take place in a social setting where individuals in the group have real life attitudes and values to face in making the change. As the individual participates in changing group values and sees others changing with him he is really helping establish a new social reality. By this means a reference group is created to which he can refer back as a standard in future situations where this change in value system is involved.

Consequently the term concrete when used in connection with the Newberry scale should be expanded in meaning to incorporate social as well as physical concreteness.

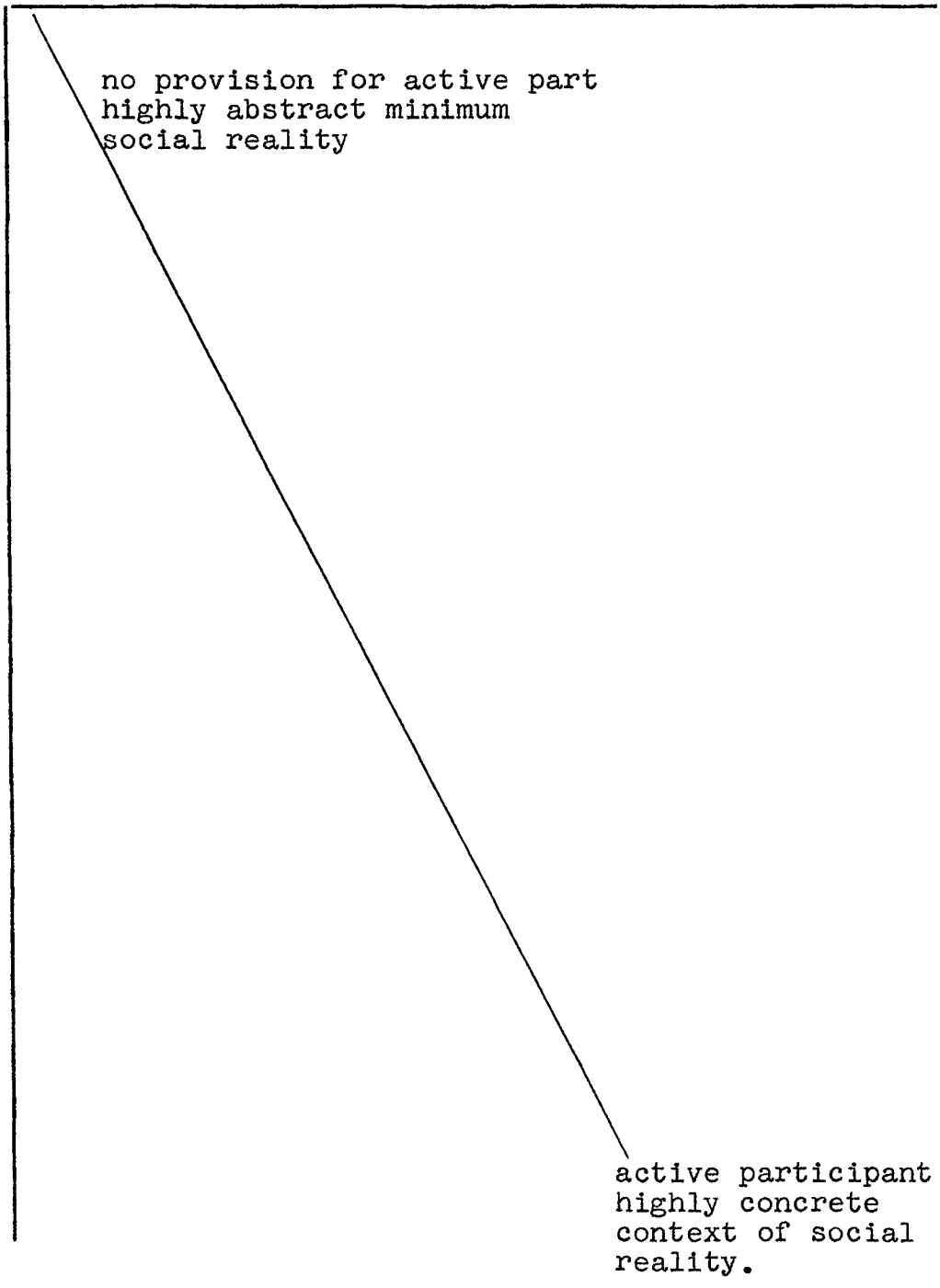
When information giving is the object and no change in the attitude or values of the individual is immediately required ego-involving participation is not necessary. From the Asch experiment we see however that even where data is not open to dispute the individual may take congizance of the group in his acceptance or rejection of it. However the agent must be aware that objective information to one group does not necessarily appear objective to another group. For example, for prejudiced persons the factual information that brain sizes of different races are equivalent may not be accepted as such since such acceptance would demand change in the total cognitive structures of such persons. Therefore the agent must be able to diagnose the attitudinal characteristics of his audience before he can determine that information that may be easily absorbed as objective by one group may threaten the whole value structure of another and therefore demand a great deal of ego-involving discussion on attitudes concerning the information. At the information end of the scale the agent gets little or no feedback as to whether the individual is learning; consequently he may have to know more about the attributes of his audience to begin with or juxtapose information techniques with other techniques

which do provide feedback. Through techniques at the highly concrete and participation end of scale the agent may judge when information techniques will be useful; he may achieve the learner involvement through the use of such techniques and then use this involvement. Where learners are already involved in a subject they can absorb a great deal through information giving techniques.

Both poles of the Newberry scale are necessary for while the abstract, low participation pole has less immediate and obvious results such techniques may give the participant the opportunity to readjust cognitive structures to accommodate them at his own pace. The appropriate use of such techniques however would presume high knowledge of the subject's cognitive structure on the part of the agent whereas the use of techniques at the other end of the scale might provide the agent with such knowledge. The decision which provides for highest participation and greatest concreteness at the end of the scale can only be used for goals which do not require great changes in the cognitive structure of the individual since such techniques do not allow time for reflection required for all-embracing change. While the concrete end of the scale eliminates the problem of transfer for it provides all but a real life context, the presence of an agent who attempts to broaden and deepen the concerns with

FIGURE 2

DEVELOPING THE NEWBERRY SCALE



the situation as they might occur in real life, being the only difference, the opposite end of the scale may require an act of imagination on the part of the learner and will only be meaningful if he can fit the new material into previous learning.

A great deal of discussion has centred around the inherent characteristics of learning techniques which achieve certain learning goals. However the goals themselves have not been discussed in any detail. From the discussion of the Lewin (52), Allport (1) theory it becomes apparent that goals achieved at the high participation concrete end of the scale are attitude change and adoption whereas information gains would be sought from techniques at the opposite pole. Thus in examining the research we can test whether behavioural change is best facilitated, as Verner (86 p.23) suggests by techniques at the concrete, high participation pole of the scale whereas information gains are greatest at the diagonally opposite pole.

Excessive attention has perhaps been paid to the extremes of the Newberry scale and little to ascending or descending order of techniques within it. These "interior techniques" would include different types of group discussion, role-playing, case study, skill practice, etc. The hoped for result from such techniques might be information gains and comprehension, attitude change and mental and motor skills.

It would seem to the present writer that mental and motor skills are acquired through the process of integrating information and techniques such as drill and practice have been developed for this purpose.

Individual techniques would appear to lend themselves primarily to the information end of the scale since there is little provision for change in the context of social reality within them. However some individual techniques provide for high participation and concreteness of both physical and social reality such as individual supervision over volunteer work or individual class instruction and these would be placed at the appropriate point in the scale.

II. SUMMARY

A development and validation of the Newberry scale for adult education techniques has been discussed in this chapter. This analysis has been based on theory and research. It would seem that the Newberry scale satisfies the Verner criterion for a satisfactory classification scheme. The scale is applicable to all techniques. It classifies techniques according to real differences in the techniques themselves (degree of participation allowed for or required and concreteness of the situation). It is free of value judgements but classifies of the techniques at different positions on the scale according to the area of effectiveness. It would

enable the agent to select the technique appropriate to a particular learning goal with a particular clientele in mind.

The scale enables the agent to use individual techniques to achieve minor learning goals and to use a conjunction of techniques to achieve major learning goals.

CHAPTER III

A REVIEW OF THE RESEARCH ON TECHNIQUES

The next task of this thesis will be to summarize research on each technique, indicate its effectiveness for different learning goals and to place it on the scale according to the degree of overt participation allowed within the technique and the concreteness of the content.

I. THE LECTURE TECHNIQUE

Organization of the Section

The overall picture of the studies to be reviewed in this thesis is that they do not lend themselves to a pleasant means of consistent organization under each technique. This is perhaps due to the fact that they have not been conceived under a constant conceptual framework or even within the same discipline. The studies in the lecture section lend themselves to organization according to the learning goal sought and will be dealt with here in terms of these goals in order of information and comprehension, mental skills and problem solving, attitudes and adoption. Thus the Newman and Highland (65), Beecroft and Annesy (12), Trenamen (83), Andrew (4), Hovland, Lumsdaine and Sheffield (43), Hill (41), Wiedenhammer (88) and Liveright (54) studies were concerned primarily with information and skill

FIGURE 3

LECTURE TECHNIQUES PLACED ACCORDING TO
THE QUALITIES OF THE LEARNING EXPERIENCE

	Degree of Abstraction				
Degree of Participation	1. Abstract	2. Semi-Abstract	3. Somewhat Removed	4. Direct Experience	5. Concrete, Real Life
Overt Participation only possible through facial expression, gestures, etc.	Trenamen-tape-recorded speech Findings of interest to lecture Carlson	Devices in Newman and Highland. Monitors in room to keep students motivated but no participation on content. Palmer and Verner.	Hill - large class.	Hearne, lecture alone concrete subject Staudohar and Smith film and lecture. McGuiness, Lana and Smith Lewin	Coch and French Levine and Butler Bond
Limited provision for overt participation for some		Lecture-Newman and Highland - blackboards questions Beecroft and Annesey repetitions and questions.	Hill - small class. Hearne - lecture plus discussion		Lecture and film strips - Hearne
Limited provision made for overt participation by all and more intense participation for some			Hovland I - film and participation practice	Levi and Higgins	Soffen

acquisition; Hovland, Lumsdaine and Sheffield (44), Cathcart (23), Thistlewaite and Kamentzy (80) Staudohar and Smith (76) with attitude change and Hearne (40) with adoption. There are also a number of studies in which the lecture technique is used as a standard and the findings relevant to the lecture will be included at the end of this section and also in the summary on the lecture technique.

Most of the studies concerned with information-giving type techniques test one or more devices used as a technique. These studies are included here because without them there would be virtually no research applicable to the lecture technique. The use of the lecture technique in our society is an accepted fact and apparently there is no felt need for research to establish its areas of efficiency; many devices however attempt to incorporate the function of the agent and are being tested to prove their validity. Devices used without the presence of an agent to change the process if it is not achieving the intended result can be used for the dissemination of information and hence throw some light on the learning situation when information acquisition is the goal. They are therefore reviewed here with the observation that a large gap in research relating to techniques has already been noted.

Research Designs of the Studies

Newman and Highland (65) undertook a study to try and compare the effectiveness for information learning of four different instructional techniques. The experiment consists in four treatments of the lecture technique, three of which are really devices, but these incorporate features which may be used within a technique by the agent and hence will help expand the discussion. The different treatments were tested within a five-day course entitled "Principles of Radio." In the first treatment the students were taught the five day course by one of two instructors who were rated well above average in instructional ability by their superiors. Devices such as blackboards, demonstration and instruments were used to supplement the lecture. Students were free to ask questions when they did not understand the presentation. The lecture technique was used in conjunction with a quiz technique which remained constant for all treatments in this experiment and hence should not affect their comparability. The quiz was a ten minute recall type quiz and in the first treatment was followed by a critique of the quiz by the instructor. When used in conjunction with the quiz the lecture was presumably more effective than when used alone since the quiz provided for overt participation and hence ego involvement. The recorded lessons which were used in two other treatments were developed through planning and

administering the recording to a trial group and then re-planning and readministering on the basis of results achieved from the initial trial. Considerable revision and retesting went into the development of these recorded lessons and the authors have described the interior structure of this device rather completely. It includes: expression of the same idea in several different ways; summarizing statements; verbal illustration; conversational style; short sentences; non-technical language; and consistency in use of reference. There were pauses at the end of each paragraph to allow students to catch up on note-taking and there were three one-minute breaks during the lessons, an antimonotony device. Narrators were changed after each seven paragraphs approximately. The recording also included four short summaries five to ten minutes in length which were given at the beginning of each day on the material presented the previous day.

The second treatment was organized as follows. The first five minutes were devoted to the workbooks which were handed each student. These workbooks were divided into three sections for each lesson. The first section contained a short summary of the material to be covered in the lesson; the second section included a definition of the words to be used; and the third section presented illustrations which would be referred to during the course of each lesson. Copies of five ozalid parts of a radio receiver were included

at the back of the workbook. The tape recorder lesson which took thirty or forty-five minutes in time was then presented. At the end of the lesson the students were given five minutes to look at the notes they had taken during the period and then a recall quiz was administered. Students were allowed to keep their quiz paper and were given a sheet containing the answers. After they had looked these over both papers were collected.

The third treatment was a supervised reading device. This treatment was the same as the previous treatment except that instead of recorded lessons participants were presented with a note book consisting of mimeographed copies of the recorded lessons. Forty-five minutes of each lesson was spent in studying this work book and students were encouraged to take notes and review the lesson as time permitted.

The fourth treatment was the same as the second treatment, that is, it was a recorder workbook treatment except that the diagrams presented at the end of the workbook in the second treatment were given as slides in this treatment. Each slide appeared on the screen for the entire time that reference was made to it during the tape. The use of a daylight screen allowed students to take notes during the course of each lesson.

Monitors were present during each of the device treatments. They were members of the project staff and their function was to keep the men motivated to perform as well as

they could and to maintain discipline in the classroom. They administered the exams and operated the tape recorder and answered questions other than questions on the content. Thus they partially fulfilled the role of an educational agent.

There was a ten-minute break between periods and a twenty-minute break in the middle of each morning throughout the course. All classes in the experiment met for a total of 22 periods and all periods were held in the morning, five periods were held on each of the first four days and two on the last days. Each class was approximately fifty minutes long.

The sample for the experiments consisted of 417 airmen awaiting attendance at the Airmen Electronics Fundamental Course, Kessler Air Force Base. All treatment groups were matched on the electronics technician aptitude index score, as was a control group of 161 airmen who were given no training. The data was analyzed only for sixty-four students in each of the four treatment groups. Only the performance scores of students in the last two classes taught by the instructor were used for analysis. The data was collected through an exam of 117 items chosen from an original 205 items on the basis of an item analysis and was administered to students in all experimental groups and the control group at the end of the five-day course. Analysis of variance was

applied to the examination scores to measure the equivalence of the treatments for information acquisition.

Beecroft and Annesey (12) undertook to test whether increased repetition of major points within lectures on elementary electricity increased achievement for students and low aptitude students in particular. A study undertaken prior to this experiment revealed that twenty-five major points in the three hours of instruction normally devoted to the subject in a two-week course on Wheel Vehicle Mechanics were presented with a high degree of stability. Each point was mentioned once, followed by an analogy or anecdote related to the point, and reviewed again at the end of the lesson either by the instructor himself or by a student in answer to questioning by the instructor. The experimental lectures were constructed along the same lines with the difference that the instructor immediately repeated the statement after each of these points. Ten successive control classes receiving standard instruction and seven successive experimental classes composed the sample, data being analysed only for U.S. and R.A. students who were White Pipeline Continental residents. When adjusted for differences in aptitude experimental and control groups were comparable. The data were collected through multiple choice test items administered as regular end-of-phase exams two days and twenty-four days after the course. A different eight items on each exam

referred to the experimental material. The data were analysed statistically.

Trenamen (83) conducted a series of five experiments to discover listener satisfaction with and preference for different lengths of radio talks. While a device rather than a technique is being tested here the findings should be useful to the agent concerned with the amount of information which can be absorbed through any particular lecture. Two radio talks were used in the experiment each of which fell into three separate though not independent parts of about fifteen minutes each. According to a board of seven judges who composed a marking scale there were five major points in the first section of the first talk on China and Communism, two in the second and five in the third. There were fifty major and minor points in the talk. The second talk entitled 'The Nature of the Universe' totalled seventy-three points for forty-five minutes suggesting that this talk was more compressed than the talk on China. The population from which the sample of experiments one to three was selected consisted of persons invited by the principles of the City Literary Institute, Morely College, the Mary Ward Settlement. There were also some readers from the Leyton Public Library in experiment one. Only students who had not previously heard these broadcasts were invited. The samples of experiments one to three were laid out on a Latin square plan

according to age groups and educational levels, each treatment group placed in a separate studio and broadcast a segment or segments of the talk according to the plan. In experiment one the sample which was comprised of 103 adult students was divided into five treatment groups: Group A heard the first fifteen minutes of the talk, Group B heard the first and second fifteen minutes of the talk, Group C heard all three fifteen minute sections of the talk, Group D heard the second two fifteen minute sections of the talk and Group E heard only the last fifteen minute section of the talk. The data was collected through a "freely written recall" test of the talk immediately after the experiment. Participants were asked only to write down in their own words and in any order as much as they could remember of the important points of the talk. The data was analyzed by reference to a list of important points in the script which had been agreed upon by seven independent judges and weighed for relative importance so that twelve points earned three marks each, five points earned two marks each, and the rest earned one mark each.

In experiment two the data was collected by means of a recognition test which was composed from the original important points as agreed upon by the judges, eight important points being used for each of the fifteen minute sections of the talk. These were written out as nearly as possible in the speaker's own words, with two extra statements added,

one incorrect and one correct though not mentioned by the speaker. Listeners were asked to judge the correctness of twenty-four such statements immediately following the talk.

The instrument for data collection in the third experiment was an ordinary school examination type of open questionnaire consisting of five composite questions for each fifteen minute section of the talk.

In experiment four the data were collected through four exam type questions for each fifteen minutes of the talk, participants being given ten, twenty, or thirty minutes to answer the questions after hearing fifteen, thirty or forty-five minutes of the talk respectively. Most participants had just finished as the time was up. Part of this sample consisted in members of a class in Astronomy whose scores were shown separately from those of the other students.

In experiment five a small group of adult students were asked to complete a multiple choice test on the talk on astronomy one week after listening to the talk. The test consisted of seven questions based on the first fifteen minute period of the talk.

Andrew (4) in an experiment testing the workshop method sought to discover the efficacy of the lecture and group discussion techniques for conveying information and providing for integration. Four information giving types, two techniques and two devices were directed to the total

workshop on separate occasions and the results compared. The lecture techniques is described only as a lecture on psycho-sexual development. The panel discussion consisted in a group of lay people presenting a pamphlet called "How to Live with Children". The film used was The Face of Youth. Two recordings from the enquiring parent series entitled "Dealing with Destructiveness" and "Moral Training of Children" were used. The data was collected by a questionnaire administered at the beginning and end of the workshop and analysed by use of sets of test items on information introduced to the workshop by the different information giving techniques. The comparison was based on the mean effectiveness index for each set of items covered by the technique.

The purpose of the Hovland, Lumsdaine and Sheffield experiment (43) was to teach the pronunciation of the alphabet and of numerals so that participants could go on to further effective practice. The teaching was accomplished through a device, film strips, so constructed that the first frames showed the nature and importance of the phonetic alphabet followed by individual frames showing each letter and its phonetic name illustrated by a picture and accompanied by sound effects and narration intended to help the student form an association between the letter and the name. Each six

frames were followed by a review frame giving a list of the preceding phonetic names, twenty-six frames and four review lists all told were used which in turn were followed by a complete review of the alphabet, a digression on the pronunciation of numerals and another complete review list this time on the pronunciation of numerals in turn followed by another complete review list given in scrambled order. In the experimental groups the letters in the review questions were followed by question marks and the group was asked to recall and pronounce the phonetic names whereas the control groups, the audience viewed the film strips but remained passive. A further condition of the experiment was that half the men under each treatment were told there would be an immediate recall test after the film strip. Hovland hypothized that the participating groups would learn more because their attention was engaged through overt participation in the learning and that prior knowledge of an exam would motivate participants to learn more.

The sample was 742 armed service recruits with no previous military training who were passing through an initial centre in a few days. The men were randomly assigned to sixteen audience groups of approximately fifty persons each. The name and serial number of each man was recorded so that information concerning his years of schooling and his AGCT score could be obtained from the classification offices. The

experimenter was then able to equate the learning ability of different groups and to analyze the value of increased overt audience participation on men of different learning ability as measured by the AGCT and years of schooling. The data were collected through oral and written tests. Five men with roughly equivalent educational backgrounds were selected from each of the sixteen audience groups, a card with the letter stamped on it in large type and allowed fifteen seconds to respond orally with the correct phonetic name. The rest of the men in each group were given a mimeographed sheet of the letters with blanks beside each letter for writing in the phonetic names. Five different tests were used with equal frequency in this part of the experiment and the data were analyzed statistically.

Hill (41) in a study the major purpose of which was to compare the discussion and lecture techniques with regard to achieving the goals of information learning, mental skills and attitude change compared (in appendix E) two variations of the lecture technique and results. These will be discussed here although the major purpose of the Hill study will be discussed under the section on the group discussion technique. Although he does not describe the lecture technique he states that the lecturers selected for the experiment were considered good classroom teachers who were anthropologists and experienced members of the University faculty.

These teachers were popular with students and, when approached, evinced some interest in the research project. The two variations of the technique are described as one large (233 students) and two small (twenty students) classes. The research design of this study will be given in the section on the Study-discussion techniques.

The purpose of the Wiedenhammer (188) study was to ascertain reaction to troop information meetings. The technique consisted in a talk and or film followed by open discussion. The leader of these programs was either an enlisted man or an officer. The sample included 4727 enlisted men and 1219 officers and was selected as a random sample from sixty-five army installations in all parts of the world. Fifty-six per cent of enlisted men had completed high school and 20 per cent of these had some college. Ninety-three per cent of officers had completed high school and 70 per cent of these had some college. The data was collected by means of a questionnaire administered in an informal group setting. Liveright (54) undertook a major work on voluntary adult education to test his hypothesis that teaching style and content areare interconnected. He developed a framework for examining informal adult education programs and their leadership in order to study and compare different styles of leadership in connection with content. The sample consisted of several hundred volunteer leaders in fourteen

different informal adult education programs. Only leaders who had been active in their particular program for one year or more were selected, and only those who were comfortable, happy, and successful in their role were observed. The data were collected through questionnaires, individual interviews, and group interviews and were statistically treated. This study is included here because it is concerned with a number of information-giving techniques at the content end of his continuum which could conceivably be used in conjunction with one another to meet the goal of the agent. This study will be discussed again at other points in this thesis where the material is relevant.

The following three experiments: Hovland, Lumsdaine and Sheffield (44), Cathcart (23) and Thistlewaite and Kamentzy (80) use the lecture technique to seek to persuade. Nevertheless they are reported here because the findings throw some light on how the democratic process can be fulfilled or denied with various audiences when the lecture technique is used to convey information on controversial matters.

The purpose of the Hovland, Lumsdaine and Sheffield (44) experiment was to discover whether when the majority of the evidence supports the thesis under consideration it is more effective to present only the side supporting the thesis or to present both sides of the question when the goal is

attitude change favouring the thesis. In this experiment two radio transcripts were composed of commentators' analysis on the Pacific war and the attempt was to convince audience it would be a drawn out war. All materials were official releases from the American Office of War Information and the War Department. The first treatment entitled "One Side" was fifteen minutes long and included discussion of the distance problems and logistics in the Pacific, resources and stock-piles in the Japanese Empire size and quality of the main bulk of the Japanese army that had not yet been in battle and the determination of the Japanese people. The second treatment entitled "Both Sides" ran for nineteen minutes during which the same material was presented in exactly the same way the four extra minutes being devoted to considering arguments on the other side of the picture including U.S. advantages and Japanese weaknesses, previous progress of the U.S. despite a two-front war, the U.S. ability to concentrate on Japan after V-E day and Japanese shipping losses and manufacturing inferiority. The experimenters state that principles followed in the development of this second script were as follows: the major arguments on the opposed side should be given at the beginning in order to indicate to the opposition that their point of view would not be neglected; appeals to the motives of the opposed point of view should be given early; opposed arguments that could not be refuted

should be given fairly early; refutation of arguments of the opposed point of view should be attempted only when obviously compelling and strictly factual refutation is available; an unrefuted opposed argument should be followed by an uncontroversial positive argument.

The sample came from nine quarter-master training companies during the first few weeks of April 1945. Intercompany difference was controlled, one-half of the sample were new recruits and one-half were veterans being trained for reassignment.

A pretest ostensibly surveying the point of view of veterans being discharged and redeployed to the Pacific war was conducted with the experimental sample to discover their estimates of the length of the war with Japan and the frequency of various arguments for a short or long war, the information so gained being used as a basis for the construction of scripts in which the greatest weight was attached to countering arguments which were offered most heavily by the men. This pretest was carried out in different buildings with different administering personnel and with formally different questionnaire blanks than the post test of the experiment. The final sample of those present at both pre and post meetings consisted in 625 men, 214 in each experimental group and 197 in the control group.

A week after the before survey the transcript was

presented in orientation meetings as a basis for discussion of the topic. The message was heard in platoon size groups and the discussion was to be conducted by second lieutenants with previous teaching experience. After the transcript was played the men were given a short questionnaire as an after measure. It was through this questionnaire that the data was collected. The following group discussion was not part of the experiment. It is important to note that the speech was incorporated into a device. The data was analyzed by matching the before and after questionnaires on the basis of personal history and handwriting, and examined for the net effect of the message, in terms of one-half year estimates of further duration of the war. Results were given in terms of the net proportion who changed.

Cathcart (23) used four treatments of a twenty-minute speech on the "Abolishment of Capital Punishment" designed to test the hypothesis that when attempting to win belief a speaker must use adequate evidence and authority in support of his premise. All variations of the speech which was taped and played to different treatment groups, introduced the problem, demonstrated the need for change and pointed the way to solution. Speech A consisted in generalized statements; speech B in the same statements supported by evidence which was neither linked to a source nor documented; speech C in speech B with documentation for most points

providing the name or document quoted with place and date, Speech D in speech C plus the qualifications of the source or authority documented. Again a device rather than a technique is being tested here.

The sample was composed of students in beginning and advanced public speaking classes at Evanston Township High School, northwestern University School of Speech, and the University College of Northwestern Adult evening classes. The chi-Square Test for significance revealed no significant differences among the three populations in terms of original opinion, readiness to shift, sex ratio, educational level, and school represented. A significant difference existed only in distribution of original opinion which was significant with regard to sex. Each treatment-group consisted of approximately eighty-one persons composed of a random sample of the three school populations.

The data was collected by means of the Woodward opinion shift or, a valid and reliable instrument for measuring quantitatively the amount or degree to which an auditor has shifted an attitude or opinion. This form was administered before and after the speech with each participant rating his opinion of the speech on a one to ten-point scale for the factors of evidence, argument, clarity of ideas, vocal delivery, liveliness, and speaker's competence. The data were analyzed statistically.

Thistlewaite and Kamentzy (80) undertook an experiment to determine whether, in order to create opinion change favourable to the thesis of a communication it is better to explicitly deny or refute opposed arguments or to avoid so doing and where counter arguments are given whether it is better to elaborate them or to avoid so doing. Four treatments of a lecture, the thesis of which was that the Korean war should not be limited to the Korean peninsula were placed on tape and presented with slides. Consequently we are also dealing with devices in this experiment. Program one, entitled "Refutation with Elaboration of Counter Arguments" acknowledged counter arguments to the thesis and followed each by a statement of facts supporting the counter-argument. After this came one or more statements explicitly denying the validity or adequacy of the counter argument and a presentation of facts supporting the thesis. Program Two entitled "Refutation Sans Elaboration of Counter Argument" was identical to Program One except that the lecturer omitted all facts supporting the counter argument. Program Three entitled "No Refutation with Elaboration" was also the same as Program One except that the counter arguments were not refuted, rather non-refutive statements were given which did not deny the validity of the counter argument but attempted to convey that counter arguments notwithstanding there were other arguments to consider. Program Four entitled "No Refutation

without Elaboration", was identical with Program Three except that no counter arguments were given. The experimental messages were developed on the basis of a pre-study with 230 recruits at the Sampson Air Force Base in New York. Seven hundred and fifty recruits in their twelfth day of training at the Sampson Air Force Base New York comprised the experimental group. The data were collected through a before questionnaire administered one week prior to the experiment and an after questionnaire administered immediately after the experiment. Both questionnaires consisted in fifteen key items. The post experimental test also included a group of reaction items of two kinds, one type designed to measure the tendency of the sample to discount the message they had just heard and the second type to discover what the participant identified as the speaker's main conclusion. These attitude items were again administered to some of the air force recruits twenty-one days later. Scaleogram analysis was used to determine whether scales producing nearly perfect reproductibility could be obtained. The scale so developed proved reliable from .96 to .99 level of confidence for the four coefficients of reproductibility on attitudes towards the Korean war. The effectiveness of the speeches in changing attitudes towards the Korean war was measured through comparing post-test scores of each experimental group with the post-test score of the control or pre-study groups. The

treatment groups were found to differ from each other on initial favourable attitude. Therefore the statistical analysis was done primarily on treatment groups which could be matched for pretest scores and whenever more than two individuals from different groups could be matched on pre-treatment score they were selected according to a table of random numbers.

The purpose of the Staudohar and Smith (80) experiment was to see if a lecture used with a film to focus on data relative to desired attitude change would result in greater favourable attitude change than when the film was used alone. This experiment is also in the area of persuasion rather than education but the results may point to the value of future educational experimentation into such a combination. A commercial motion picture with scenes useful to the formation of desired attitudes towards discipline in the armed services was used and three lecture treatments were developed to focus the audience's attention on the relevant points in these scenes: the first a pre-film lecture pointed out what recruits should observe in the film; the second, a post film lecture pointed out what recruits should have observed; and the third consisting in two short lectures was used pre and post film to serve the purposes of both treatments one and two. All lectures were delivered somewhat informally from notes by an Air Force officer who was wearing

campaign ribbons to add prestige to the lecture. The word level of the lectures was evaluated as fairly easy by means of a Flesch Reading E Score. The sampling unit was not the individual but the flight which averaged fifty-five airmen. The sample consisted of four groups with four flights in each group assigned by a table of random numbers. Three of the groups were submitted to one of the experimental treatments and the fourth was used as a control which saw the film and filled out the questionnaire. The men in the sample were in the second week of basic training. The data was collected by a sixteen item questionnaire developed through pre-test and found to have an internal consistency of .46 by Kuder-Richardson formula 20. Significant variation in attitude toward discipline was found to exist between groups and the t test was therefore used to compare groups.

Hearne (40) undertook a study of techniques used in farm meetings with reference to their effects on adoption. He studied the lecture used alone and supplemented by devices or other techniques. The lecture technique is described as a lecture given by the county agent on the subject of (1) Growing Healthy Chicks, (2) Summer Management of Growing Pullets, and (3) Spring and Summer feeding of the dairy cow, all fairly concrete subjects. Compared with the lecture used alone were a lecture supplemented with illustrative charts, a lecture used in conjunction with a suitable

film strip showing conditions in the area; and a lecture followed by a talk by the local leader on a particular project giving his or her expectations of the program.

The sample consisted of 310 adults in attendance at a total of thirty-four meetings. One meeting was held in the spring of 1929, twenty-four meetings were held in the spring of 1930, and nineteen meetings were held in the spring of 1932. The survey party were able to interview an average of 9.1 persons who had attended each meeting, 75.5 per cent of the 310 farms represented were operated by owners and the remaining 24.5 per cent by tenants. The average farm size was 159 acres and was in the eight counties of Missouri where the meetings were held, and represented all varieties of land and road conditions in that area from the rough Ozark Mountain hills to the Mississippi and Missouri bottom lands. Twenty-five point six per cent of those present at poultry meetings reported poultry as one of the main sources of their income while 84.8 per cent of those present at dairy meetings reported the same condition. The data was collected by a survey party of fifteen members of the state extension service and two members of the United States Department of Agriculture. These persons had forms through which they recorded the data and the interviews were held from the time of the meeting to three or four months after it. Information was obtained from each interviewee as to what new practices

he was using regardless of the source of information. Hearne developed an index of adoption by combining two sets of percentages: the percentage of farmers exposed to the techniques who were influenced by them and the percentages of practices changed per farm which could be attributed to attendance at a meeting. Taking the lecture technique as a base of one hundred he compared its relative effectiveness with that of the conjunction of lecture and other techniques.

Findings

Processes. Few researchers have examined the internal processes of the technique they were using closely and related such processes to the results of the technique. Where this has been done it can provide helpful leads for the agent as he attempts to work systematically within the technique to achieve the learning goal. It seems useful where there is a large concern theoretically or experimentally with such processes to report the findings on process in a separate section. Of course such division is artificial since the agent is concerned with processes in relation to results. However such division will give opportunities for more comprehensive examination of processes than might be possible in a combined section.

Trenamen's (83) findings suggest that the amount of information contained in a speech is a large factor in how

much the listeners are able to remember. The talk on China contained only two thirds the number of points contained in the talk on astronomy and those who listened to the latter talk even though they were also participants in an astronomy class, remembered less than those who listened to the former talk. The chief gain in learning was from the fifteen-minute to the thirty-minute level, and after the thirty-minute level the assimilation of participants gave out altogether. Listeners in all five experiments preferred the thirty-minute talk suggesting subjective preference and ability to assimilate are connected. Slightly over two-thirds of the listening group were interested in each phase of the talk on China indicating that the speaker was able to maintain an equal level of interest throughout the talk, a fact which the experimenter considers lends validity to the forementioned results on preference for length of talk and information remembered.

Hill (41) found differences in technique processes for the different sized lecture classes. The instructors in the two small classes asked an average of 3.3 questions per class meeting and an average of 9.3 participants directed questions or comments to the instructor in the course of each meeting. The observers considered that this interaction provided some opportunity for participants to affect the conduct of the lecture. No figures are given to indicate the

amount of interaction that took place in the large lecture classes and we may therefore infer that interaction was practically nil.

Participants of the total study (see findings in group-discussion section) stated a preference for a combination of lecture and discussion techniques and in view of this the author compared group satisfaction with this nearest approximation of the ideal, that is, the small lecture group with group satisfaction with pure lecture and pure group discussion and found that the group stating it was "completely satisfied" with the series was significantly larger for small lecture classes than for either large lecture classes or discussion groups. He points out that in comparing lecture groups further testing would be required to determine whether this difference was due to "audience participation" that is the process used within the technique, or group size but since discussion groups and small lecture classes were approximately the same size the difference here is likely attributable to technique. The results showed that in the small lecture classes 4.6 per cent developed new friendships with other class members while in the large lecture classes 8.3 per cent reported forming new friendships with other course members. This might indicate that course participants developed their own means of engaging themselves in the learning experiences since it seems likely that participants discussed course

material with the friends they made. It would be interesting to examine this phenomenon further to see if such associations account for any of the results for information-giving techniques used over a period of time and if the findings can help the agent in any way better plan the learning experience.

Wiedenhammer (88) found 58 per cent of enlisted men in the sample would have attended the meetings voluntarily and 18 per cent would have stayed away if given a choice. Detailed analysis showed that enlisted men who found the topic interesting also felt they got a lot from the topic and found meetings worthwhile. The meetings were apparently geared to those of lowest formal education for those in the categories of grade school or some high school consistently reacted most favourably to questions asking whether they learned interesting information or found the meeting worthwhile whereas those who had finished high school and particularly those who had some college education were less enthusiastic. The experimenter found that 71 per cent of the enlisted men preferred a talk followed by open discussion whereas 13 per cent preferred a talk only. Fifty-six per cent of this population considered that the right amount of time was being spent on discussion whereas 28 per cent thought too little and 8 per cent thought too much time was devoted to it. Thirty-nine per cent of those who attended college said they

would prefer more discussion whereas only 19 per cent of those who had only gone to grade school wished more discussion. It might be noted that group discussion in this context may mean anything from open forum to small face-to-face groups. Forty-seven per cent of respondees found lectures sometimes worthwhile, whereas 20 per cent gave this response for group discussion. Dissatisfaction with an enlisted man as leader was likely to result in the choice of an officer whereas dissatisfaction with an officer was likely to result in a choice of any competent person. In the main unit officers agreed with enlisted men and so findings of this section would be applicable to officers.

Liveright (54) found two identifiable extreme leadership styles, namely the group oriented and the content oriented. Agencies concerned with disseminating information or teaching skills attract content-oriented individuals as voluntary leaders. Characteristics of the content oriented leader in a voluntary setting which affect the process are as follows: he can be described as a quiet set demanding person who is concerned with the subject matter and in getting specific tasks accomplished; his manner is distant, cool and impersonal; the materials are a major carrier of program and are used to present facts and information. The responses of leaders in content-oriented programs to the question "What is your greatest satisfaction in teaching," showed satisfaction

in personal achievement and in getting specific tasks accomplished. The characteristics of the group attracted to the content-oriented program are that they have never met as a group before and do not usually know each other outside the program. They do not have any set roles before the program begins and probably do not communicate with one another outside the program. They may come from widely different occupational groups and different social backgrounds with varying previous educational level. Where the aim of the program is understanding or comprehension of the subject matter and there is low group cohesion the experimenter suggests that the content oriented teaching approach may be best initially and that group interaction and development may be encouraged over a period of time.

Information. The findings of the Newman and Highland (65) experiment were that the amount learned by all four experimental groups was appreciable and that the overall performance of students in each group was equivalent. Students with different aptitude levels did equally well under each method of instruction. However, while students under all four treatments did equally well on the first and second parts of the exam students in the instructor group did better on the third section of the exam which was based on the final third of the course. This difference was significant at the .05 level of confidence for the recorder workbook and the recorder

slide treatments but not for the supervised reading treatment. The experimenters consider the results can be generalized to a population similar to the one used in this study, taking a compulsory course and tested by an immediate recall exam. Hypotheses suggested by the authors which might be tested as to why the mass media methods were equally effective with instruction for the first two thirds of the course but were less effective for the last third are: that by this time the novelty of the mass media devices had worn off; that no provisions were made within the devices for answering questions and cumulative effect of unanswered questions might be expected to show by this time; that the early sections of the recorded material were subjected to much revision whereas the last part of the course was not so intensely revised and therefore may not have been as well structured.

Beecroft and Annesey (12) found that the mean achievement of students in the classes with increased repetition was reliably higher at the .01 level of confidence than those in the control classes at both testing times. Although the differences in achievement were small they were fairly evenly spread out over various test items and on half the items the experimental group was superior. Under this change in the lecture technique 10 per cent more of the low aptitude students met the criteria of passing the exam, or

stated differently, the performance of a man with an aptitude area 8 score of eighty given experimental instruction was as good as a man with an aptitude area 8 score of ninety given control instruction.

Beecroft (13) in a review of research summarizes the results of a number of experiments using high school, elementary school, college, and armed services samples. He concludes that although some lessons are learned better with one overall technique of presentation than another (e.g. film versus lecture), there is no clear evidence that one method of presentation is superior to another. Secondly he concludes that effective instruction seems to depend largely on factors that are internal to a lesson rather than on the method of presentation. Factors such as repetition of points within a lesson, telling students specifically what they are to learn, and summaries of principle points are all apt to produce effective instruction.

Trenaman (83) found in general that as the length of the talk increased the amount of information remembered decreased. In experiment one whereas 30 per cent of a fifteen-minute talk was recalled, 18 to 20 per cent of each fifteen minutes of a thirty-minute talk was recalled and only 13 per cent of each fifteen minutes of a forty-five minute talk was recalled. In experiment two he found no significant differences in the scores for each fifteen minutes of those who had

heard fifteen, thirty or forty-five minutes of the talk. These findings apparently contradict the findings of experiment one. However the author considers that the test was probably too easy in that participants could recognize the correct statement because the wording was the same even though they did not entirely grasp the meaning of the communication. In experiment three members of the audience who listened to the first fifteen minutes recalled 42.6 per cent of the test correctly, those who listened to the first thirty minutes of the talk recalled 37.7 per cent of each fifteen minutes of the test correctly and those who listened to the whole forty-five minutes recalled 22.5 per cent of each fifteen minutes correctly. These percentages are considerably better than the percentages for experiment one; although the findings were derived from the same marking scale and the students were drawn from the same sources and were similar in age and educational background. The author suggests that the aided-recall type of question used here enables the examinee to remember whole areas of material which he does not recall under the free recall method of examination. Aided recall appears to more nearly approach the real life situation where the individual in discussing with other people is aided in the recall of material. The findings for non members of the astronomy class in experiment four were that the sample which had heard the first fifteen minutes of the talk recalled

28.2 per cent of that fifteen minutes, those who had heard thirty minutes recalled 19.4 per cent of each fifteen minutes and those who had heard the whole forty-five minutes recalled seventeen per cent of each third of the talk. Since the same type of exam was used in this experiment as in experiment three the author places assurance in these findings. Members of the astronomy class in this experiment recalled 40.6 per cent of the questions for the first fifteen minutes, 20.7 per cent of each fifteen minutes for the first thirty minutes and 19.9 per cent of each fifteen minutes for the forty-five minutes.

The findings of experiment five on recall after a week were that those who heard the first fifteen minutes of the talk only recalled 56 per cent of the total possible; those hearing the first thirty minutes recalled 42 per cent and those hearing the whole forty-five minutes recalled 25 per cent which differences were significant by analysis of variance. Since the test was based on the first fifteen minutes of the talk only these results would indicate according to the experimenter that there is a real reduction in listener grasp of a talk as the talk lengthens and this reduction exceeds the normal forgetting curve. Consequently the rate of recall after thirty minutes is so low as to be uneconomical. Ability to recall was affected by educational background in all cases and significantly favours those with higher

educational backgrounds.

The different recall questions have been examined in some detail here because the results make apparent that the findings of the experiment depend to a large extent on the instrument used and the experimenter evaluates the different instruments in a manner that may be useful for future researchers concerned with information giving techniques. It should be noted that these experimental results apply to a voluntary audience and are supported in trend by a delayed recall test of one week.

Andrew (4) found that records, lecture, film and panel discussion in that order were effective in creating knowledge of child development concepts with a voluntary audience on a near immediate recall test. There was no statistically significant difference in the results for records and lecture and the results from panel discussion did not differ from the control which was not subjected to any technique.

Hovland, Lumsdaine and Sheffield (43) in their experiment on the results of participation in learning phonetic alphabet and numerals found, when the sample was tested orally without regard to education, intelligence or motivation, that the experimental group was significantly better than the control group at the .01 level of confidence for the thirteen more difficult names and at the .07 level

of confidence for the thirteen least difficult names. When the test was announced in advance the control group was significantly better than the control group when the test was not announced in advance at the .01 level of confidence. There was a difference of 18.1 per cent between the control and experimental groups in the non-motivated that is, not informed of following exam analysis and of only 5.2 per cent under the motivated analysis. These results were significant at the .04 level of confidence and indicate according to the authors that active participation is most necessary when participants are least motivated to learn. The findings of the written test were parallel those of the oral test in all cases, the only difference being that the average number of phonetic names answered correctly was higher for the written test under all conditions and the differences between the experimental and control groups were smaller. The experimenters conducted a further analysis to discover the relationship of motivation versus non-motivation for learning with relation to those of higher intelligence as judged by position on the AGCT scores of four or five as against those of lower intelligence as judged by positions on the AGCT scores of one, two and three. In general they found that the participation technique tended to enable men under all conditions to learn as much as is normally achieved under only the most favourable conditions; that is participation was found to help most

of those who needed help most, individuals with little ability or motivation. In the authors' opinions these findings may be generalized to a sample similar to the one studied in learning material of simple pairs association such as vocabulary or nomenclature, recognition of aircraft type etc. for a compulsory learning situation and an immediate recall exam!

The authors hypothesize that although the factors of participants' practice and motivation through a knowledge of an exam may have been analyzed separately in this experiment, they gain results through the same inner mechanism. Since it appears likely in typical human learning situations that motivational procedures are successful because they create incentive in the individual to practice. Nothing is learned without practice. The learner in his desire not to appear stupid may apply himself more eagerly when he realizes that he has to perform actively in the group or that his knowledge will be tested immediately following the learning situation. The authors suggest that the present findings fit in well with this speculation since active participation seen as a motivational factor was less effective in creating learning when another motivational factor was introduced as well. It would appear that these findings and the hypothesis based on them lend weight to Newberry's scale which attempts to gain the active engagement of the learner through ego-involvement which in turn is achieved through overt participation. In

this experiment active engagement of the learner is also achieved through announcing a test which may in some sense have the effect of making the learning task more concrete.

Hill (41) found the mean improvement score in terms of ability to identify anthropological concepts for both large and small lecture classes was 1.2 so group satisfaction with technique was not reflected in information learning.

Thistlewaite and Kamentzy (80) discovered that students who were subjected to treatments involving refutative arguments in the talk on Korea tended to have a greater number of correct responses to the questionnaire asking the speaker's main point. However this trend did not differ reliably from chance, and in this military setting the students may have had other orientation lectures which would enable them to grasp the message. No significant trend was found to exist for initially opposed or initially favourable recruits with regard to refutive or non-refutive treatments in accomplishing the goal of comprehension of the message.

Attitude. Hill (41) compared large and small lecture classes for attitude change and, in general, the difference in attitude change was not greater for participants in the small lecture groups. It is possible that this finding is accounted for by greater group interaction outside the course for members of large lecture groups and is not a function of

within technique process itself. There would seem to be room for more research here. Hovland, Lumsdaine and Sheffields' (44) findings were that the programs on the Korean war resulted in a net proportion of two fifths of the men increasing their estimates of duration of war in the Pacific, with men in both experimental treatments changing significantly more than the control group. Thirty-six per cent of the men initially opposed to the experimental message changed their view on hearing the program which gave one side only whereas 48 per cent changed when both sides were stated, a difference significant at the .04 of confidence. Of men who initially favoured the experimental message 50 per cent changed favourably after hearing the one-sided view whereas only 23 per cent changed after hearing the two-sided view, a difference significant at the .02 level of confidence. Therefore it would appear that the program favouring one point of view only was more effective for those who were initially favourable to that point of view. Those whose education was less than high school graduation changed more favourably as a result of the one-sided point of view, a finding significant at the .05 level of confidence. Those who had high school or better education were more likely to change to the advocated view when both sides of the question were presented, a finding significant at the .06 level of confidence. When both education and initial estimates of the length of the Pacific War were

considered it was found that men of the lower educational group opposed to the communication changed more though non-significantly in a favourable direction when both sides were presented. Those with higher education changed more in a favourable direction when both points of view were presented, a difference significant at the .06 level of confidence for the initially opposed, and at the .02 level of confidence for the initially favourable. An incidental finding which was not statistically significant due to small sample size was that the omission of the topic of Russian aid in the Pacific seemed to support the conclusion that if a presentation advocating a particular point of view purports to discuss both sides of the question it must include all the counter arguments or else the presentation may boomerang by not living up to its apparent promise of impartially and completeness. The advantages of the 'both sides' program was found to be less for those who considered the ignored argument an important one.

The results of this experiment would seem to indicate that, if the purpose of general education is to create independent thinkers, it is to some extent being fulfilled for those of higher education appear less open to persuasion whether initially favourable or opposed to the case made in the lecture. However participants under both treatments changed in a favourable direction: this result could be due to several factors; the message made sense; or the men were

able to see the desired outcome due to the fact that much greater time was given to the favoured position. From the adult educator's point of view these findings would seem to indicate that a poorly-educated participant group is easily swung by persuasion and opportunities for developing thinking abilities are needed before individuals are able to judge the validity of propaganda.

Cathcart (23) found that all four variations of the speech introducing the problem of capital punishment produced positive shifts of opinion on the Woodward Opinion Shift Form. Speeches B (supporting evidence neither linked to a source nor documented) and Speech D (supporting evidence documented and providing qualifications of source or authority documented) had identical mean shifts significantly greater than zero at the .05 level of confidence though not significantly greater than the mean shift of Speech C (Speech B with documentation for most points providing the name or document quoted with place and date,) which in turn did not produce a greater mean shift than Speech A (generalized statements). The author notes that the shift which occurs appears to be a function of the original opinion of the auditor, his proneness to shift and his judgment of the value of the argument rather than of sex, educational level, speech training or subject matter knowledge. It was the greater shift on the part of the group originally opposed to the message which accounted

for the results. The normal assumption would appear to be that the speeches would change opinion in an ascending order of documentation and since this is not the case further experimentation might be required to test whether this is due to a variance in homogeneity of treatment populations or a function of the treatment itself. It might be worth investigating whether the same conditions apply to a message relating to matters of fact that is would students change attitudes more readily to conform with factual information if the sources of such information were well documented? Thistlewaite and Kamentzy (80) found that the experimental communications were effective at the .001 level of confidence in every case creating favourable opinion shift toward U.S. Policy in Korea. After three weeks the shift remained significant to the .02 level of confidence for groups one (refutation with elaboration of counter arguments); to the .04 level of confidence for group two (refutation sans elaboration of counter arguments); to the .01 level of confidence for group three (no refutation with elaboration of counter arguments) and at the .001 level of confidence for group four (no refutation sans elaboration of counter arguments.)

The experimenters surmised that the refutitive treatments might evoke discounting reactions in which case the attitude change resulting would be less than where discounting

reaction were not evoked. However a contradictory surmise was that if the primary effect of refutation was to increase comprehension of the speaker's main point then attitude change would be greater than with refutitive than with non-refutitive treatment. Their findings were that neither initially opposed nor initially favourable recruits showed greater tendency toward discounting the message with refutitive or non-refutitive treatment. Elaboration or non-elaboration treatments also had no effect on results in terms of discounting reactions with no significant differences found even when the initially opposed and the initially favourable groups were treated separately.

A further hypothesis was that members of a group who discount a persuasive talk will be less influenced by the talk than those who do not discount it. It was necessary to adjust each class to a common pretest score base to test this hypothesis and the data of four of the eight groups did not meet the necessary assumption of homogeneity of variants and regressions. However the results of the other four groups were found to confirm the hypothesis for adjusted means of groups with high and low discounting scores at the .005 level of confidence. In view of the findings it would be interesting to know what factors do account for individuals discounting a persuasive talk and future research might be directed along these lines because it might provide

information on how the mind of the participant works.

The non-refutitive treatments had a greater immediate effect on favourable attitude change than the refutitive treatments significant to the .02 level of confidence which was retained at the three week, post test significant at the .08 level of confidence. The no-elaboration of counter-argument treatments with or without refutation were significantly more effective in creating favourable attitude change among initially opposed recruits than the elaboration treatments at the .01 level of confidence on immediate post test and at the .04 level of confidence on the three week post test. However those initially favourable to the communication showed a non-significant trend towards changing their attitudes even more favourably when counter arguments were elaborated.

The experimenters also hypothesized that where other things are equal attitude change will be greater among persons who comprehend the intended conclusion than among those where comprehension is limited. The unadjusted mean post test score of the high comprehension groups was found to exceed those of the low comprehension groups in seven of the eight programs. The overall trend here was significant at the .01 level of confidence.

This evidence could signify that under persuasion participants change to conform with the intent of the message

as they perceive it while possibly remaining untouched at deeper levels. Perhaps this is a hypothesis worth testing. This experiment was carried out in a situation compulsory for the sample and the findings that change in a favourable direction were greater for all with the no refutation treatments and for the opposed with the no elaboration treatments would seem to indicate that the aim of propaganda was largely fulfilled in this experiment. These findings appear to be at variance with the Hovland Lumsdaine and Sheffield (44) results that those of higher educational background and those initially opposed changed more when both sides of the argument were represented. These results could be a function of experience or previous educational background of the two populations and indicate that further research in this area might prove fruitful to adult educators in order to indicate the characteristics of participants most open to persuasion and the kind of educational experience necessary to give them the skills for independent thinking.

Staudohal and Smith (76) found that their Air Force sample increased significantly more than the control group in favourableness of attitude toward discipline when subjected to any of the lecture treatments. There were no significant differences found among results for any of the lecture groups. It might be remarked that the auditors were new draftees under compulsory military training and the intent of the

message was very clear. Further experimentation would seem necessary to determine whether the long term results of such a program produced positive results or whether persuasion is effective when action based on well thought out principles is necessary. It appears that persuasion was effective in achieving the researchers goal in these experiments at least for certain samples on immediate and short term recall. It would be worthwhile testing how long term such results are and whether they can stand the tests of life as well as opinions which are formed after considering all the factors involved.

Adoption. Hearne (40) found that when the lecture technique was supplemented by other techniques greater adoption of new practices resulted. Using the index of adoption with the lecture as a base of one hundred he found lecture and discussion (probably questions and answers) resulted in an index of 121; lecture and local leader in an index of 128; lecture and chart in an index of 142 and lecture and film strip in an index of 155. Consequently it would appear that a concrete lecture can result in changed action patterns when the learning group is involved in the subject matter at hand and when they already have attitudes conducive to change. (It is assumed here that farmers would be involved in the subject matter and that their attendance at meetings would be indicative of the desire to engage in better farming

practices). In this case the learner's ego would appear to be engaged through his occupation, a factor outside the control of the learning situation but one of which the agent can recognize and make use.

IIA. THE LECTURE TECHNIQUE USED AS A STANDARD

Organization of the Section

The studies in which the lecture technique was used as a standard also lend themselves to organization by learning goal. The Hill (41), Carlson (22) and Palmer and Verner (66) studies were concerned mainly with information and skill acquisition; the Levi and Higgins (50) experiment with problem-solving; the McGuiness, Lana and Smith (60) and Soffen (71) experiments with attitude change, and the Lewin (53), Coch and French (24) Levine and Butler (51) and Bond (17) experiments with adoption. These experiments will be discussed fully under the appropriate section on group discussion but the descriptions of the lecture technique and the findings connected with it will be written up here and incorporated into the summary on the technique.

Description

The lecture as used in the Hill (41) study has been described earlier as a presentation by teachers well liked by their college students and experts in their subject field.

Carlson (22) described the lecture as a method

appropriate to very large audiences of students where students did not contribute to the development of concepts presented for consideration but were able to take notes.

In the Palmer and Verner (66) experiment carefully constructed lectures of forty-five minutes duration were presented without interruption from the group followed by five minute question period. This sequence differed from normal procedure for the sample from the air force school where lectures were usually interspersed with questions.

In the Levi and Higgins (50) experiment the lecture technique was used to provide a critique on previous crew problem solving. An evaluation scale which is presented in outline in the section on
was given to each crew member listing characteristics which previous research had shown to be important in the performance of group tasks. The instructor then explained, in general terms, the meaning of each item on the list, pointing out that they had proved valid points to consider in successful group problem solving of various kinds. He went on to diagnose and evaluate the crews' performance using this rating scale and suggesting ways of improving group procedures and performance. He encouraged questions and answered them thoroughly.

The McGuiness, Lana and Smith (60) experiment was concerned with the effectiveness of an information device (film)

used alone, as compared with its juxtaposition with permissive group discussion. The information type was a device of concrete nature which allowed for no audience participation, but which might be the near equivalent of a concretely illustrated lecture which allowed for no participant-instructor interaction. Three films are shown at bi-weekly intervals: these NFB films were entitled The Feeling of Rejection, The Feeling of Hostility and Breakdown. In a second part of the experiment new groups saw only one of the three films.

Soffen (71) initially described the lecture treatment as two lectures, carefully prepared and well presented. As a result of the findings of his study Soffen remarks that the advantages of the lecture technique are that an authoritative person who has something to say can prepare his material with maximum opportunity for quality and creativity while the listening group: "is psychologically receptive, it recognizes the qualifications of the lecturer" (71 p.32).

Lewin (53) describes the lecture technique simply as lecture with the use of charts. These lectures seem to have been twenty-five to thirty minutes long. The group was very small.

Coch and French (24) describe the technique used within their control group as a lecture given by the time study man on the changes to be made. This presentation was followed by

questions.

Levine and Butler (51) state the supervisors in their experiment were given a detailed lecture on the theory of employee performance rating. The lecture provided background material on wage administration and job evaluation and pointed out errors in previous employee ratings interpreting reasons for their occurrence. The lecture was illustrated with graphs and figures. Finally it was clarified that each rater was to rate individual performance and not the difficulty of the job. This presentation was followed by a question and answer period where completed answers were given. This session took one and one-half hours.

In the Bond experiment (17) the lecture was set up as a twenty-minute talk with a ten minute question period at the end. The investigator identified herself as a member of the Duluth Health department and an authority on the subject. The lecture was seen as an information giving technique and only information questions were answered during the lecture.

Findings

Processes. Palmer and Verner (66) found that if participants had to choose one of the lecture or group discussion techniques they would choose the lecture although they expressed a preference for joint use of the techniques. Bond (16) found that the lecture treatments in their

experiment seemed to produce a good response and there was considerable identification with herself as a lecturer.

Information. Hill (41) found lecture and group discussion techniques equally effective in achieving the goal of information acquisition. However professionals learned more under the lecture treatment. Carlson (22) found no significant difference between the two techniques for any measures, one of which was information acquisition while Palmer and Verner (66) found that the pilot trainees under the lecture treatment had significantly better scores on an immediate recall end of course examination.

Attitude. Hill's (41) findings indicate that lecture members were not so homogeneous in attitudes at the tenth meeting as were discussion members and those most authoritarian ethnocentric and lacking in tolerance for ambiguity had stayed with the program whereas such persons tended to drop out under the group discussion treatment. Moreover overall attitude change was equivalent in the two groups. McGuiness, Lana and Smith (60) discovered that film plus group discussion did not have any greater influence on attitude change than a film alone used only once or three times on separate meeting nights. They found their population had tended towards professional judgments initially and hypothicated that such a population would change little as a result of a short term learning experience and that since they were

already sympathetic to professional judgments in the field information alone would create further change in this direction. The experimenters suggest that research-testing, long-term recall might prove fruitful since in experimentation with high school students it was found that attitude changes resulting from the combination of film plus discussion were retained better at one month post-test than attitude change resulting from film alone.

Soffen (71) found that new leaders improved significantly towards identification with profession goals in adult education as a result of two lecture sessions. As a group experienced leaders did not improve significantly as a result of training. It would seem therefore that significant attitude change can occur from lecture. The experimenter remarks that attitude change in this case may have been dependent on a body of factual information on adult education objectives for a group of leaders of varying types of adult education programs would appear to be ego involved in the material and eager to consider the information and change ideas on the basis of it. These findings suggest again that if an individual is already ego-involved in the learning he will change attitudes as a result of the lecture technique. On the basis of Liveright's (54) theory Soffen (71) hypothesized that there would be a relationship between program type in which the leader was functioning and the technique from which he learned.

Although no leaders improved significantly as a result of case discussion, he found that four of the nine new leaders from informal programs did not improve under the lecture technique. This is interesting because all nine new leaders from vocational and university programs showed improvement under the lecture technique. The findings may therefore give some tentative support to Liveright's (54) theory and suggest further research along the lines of personality and program type would prove fruitful.

Problem Solving. Levi and Higgins (50) found the lecture critique of previous group problem-solving equally effective with structured group discussion in creating better individual solutions to a further problem-solving test.

Adoption. Lewin (53) found lecture almost totally ineffective for stimulating the adoption of new meat-serving patterns, and about one third as effective as group discussion-decision for achieving greater consumption of fresh milk and one half as effective for achieving greater consumption of evaporated milk. Levine and Butler (51) found that the lecture had practically no effect on foreman's employee ratings, while Bond (17) found lecture significantly less effective than group discussion decision in creating adoption of new practices. At the time of the second follow-up she found just less than a third of those subjected to the lecture treatment reported practising the three criteria

measures. Experimental variables were found to have significant relationships to reported adoption of practices and contributed to the above results. These were: reading an article; seeing a film demonstrating performance of the suggested practices; knowing persons who had had cancer; and, joining in a spontaneous discussion on the subject with another member after the meeting. Even with these concretizing devices the lecture treatment was significantly less effective than group discussion decision Coch and French (24) found that the old pattern of hostility and resistance to change was retained by participants under the lecture treatment, that there was a high drop-out and that resulting production in units per hour was well below that of the experimental groups; yet when the remaining members of this group were reassembled after two and one half months and subjected to the experimental treatment they recovered their old efficiency rating and moved to a new standard.

Summary Discussion of the Lecture Technique

Description. The lecture technique may be described as the action of an educational agent in systematically presenting material to a prescribed body of students where questions, usually concerned with clarification of the subject matter are sometimes encouraged during the course of the presentation or immediately following it. In its ideal

form the lecture allows for a thoughtful presentation of a subject by a well-informed individual who may restructure the presentation as questions or even facial expression of the learners indicate the need for restatement or alteration. A lecture may be made concrete to the experience of the auditors by the introduction of audio-visual devices such as charts, films, records and so on. Use of appropriate devices would imply knowledge of the characteristics of participants on the part of the agent and therefore it is suggested that this technique might be used successfully in conjunction with other techniques which require higher participation by the learner thus giving the agent greater feedback as to the requirements of an information-giving situation. The research reviewed here would suggest that the optimum length for a lecture in terms of listener satisfaction and points remembered would be one-half hour and that approximately eighteen major and minor points could be discussed in this time. Repetition within the lecture results in greater information learning and other practices suggested by a review of the research are that material should be summarized frequently and students informed of the organization of the lecture. Liveright (54) would consider the lecture appeals to a large heterogeneous audience but Hill's (41) findings suggest some participants may resist such impersonality by forming more friendships. The lecture used with small groups

appears to encourage more questioning and is preferred by participants to either lecture or discussion in the extreme form. Hovland, Lumsdaine and Sheffield's (43) findings suggest that the agent may provide for active engagement of the participant in the learning process by requiring overt participation and by announcing a test. It might be tentatively remarked that where all points of view on a controversial subject are presented, comprehension of the material improves. These experiments would seem to indicate that those with better educational background and higher intelligence are most able to benefit from the technique in its abstract form and those with lower educational background and low intelligence learn more when participation and concretizing devices are built in.

Results. Lecture and lecture type devices result in appreciable information learning where participants are enrolled in a compulsory course and subjected to an immediate recall or short term exam. Information giving devices, used alone, would appear to produce the same results at least on a short term basis as a technique structured by an educational agent. This suggests the essential lack of responsive interaction between agent and learner at this end of the Newberry continuum for participation of a practice or test variety can be built into the device. Participation which requires the agent to continuously restructure the technique

in view of the learner's comprehension cannot be anticipated in a predeveloped device. Lecture and group discussion appear to be equally effective for achieving the goal of information acquisition although lecture appears to be more effective for those with a high level of formal education. The findings some of the attitude experiments suggest that use of the lecture technique for the goal of changing attitudes is in conflict with the democratic philosophy. The experiments indicate on short-term recall exams with compulsory audiences that those with least education change most in the desired direction as the result of persuasion. Interestingly,those with low education who were initially opposed to the message, change more favourably when both sides of the argument are given,indicating perhaps that they have learned independent thinking skills outside the auspices of formal education. Further experimentation into the long term effects of propaganda with compulsory or non-compulsory audiences as compared to the dissemination of factual information on the topic combined with opportunities for uncensored investigation of the topic by the learner might provide more information on how attitude changes which result in changed action come about and attain a degree of permanence in the mind of the learner. There is some suggestion in the research that persons whose attitudes deviate from the group norm are more likely to continue

attendance at lecture than at group discussion sessions. It might also be stated that when participants are receptive to and have voluntarily sought information and their attitudes are already in the same direction as those of professionals in the field they will change their attitudes further toward professional as a result of the lecture treatment. The Hearne (40) experiment seems to indicate that the lecture used with devices which make it concrete for the audience at hand can be used to achieve changes in practice. It would seem that this can occur where the attitudes of the audiences are favourable to the idea of new practices - in this case a better livelihood was involved, farmers are accustomed to changing practices to achieve better production- and the major requirement is information on how such changes can be accomplished. The results from the adoption experiments designed primarily to test group discussion-decision and using lecture as a standard suggest that lecture is totally ineffective for achieving this goal in some cases and achieves up to 30 per cent efficiency in others. It was apparent that where concretizing devices were used with the technique adoption increased and when higher participation came about spontaneously after meetings adoption also increased. More research is needed to determine in what situations lecture can be used to achieve the goals of attitude change and adoption.

The lecture, and other information-giving techniques appear to have been the dominant techniques used within the formal educational system and as such the learning results obtained from their use have not been questioned. As a consequence there is not much research concerned with the areas of effectiveness of the lecture technique whereas there is a great deal of research on group discussion and discussion-type techniques. In some of the research on discussion the lecture technique is used as a standard. There is a great need for research on the goals which the agent can hope to achieve through the use of lecture and lecture type techniques in adult education situations.

II. THE DEMONSTRATION TECHNIQUE

Organization of the Section

Only one study concerned with demonstration techniques was discovered. From perusal of this study it appears that there are two types of demonstration technique: process demonstration and result demonstration, the first of which is concerned with the application of information to demonstrate a new practice and the second with information-giving on the results which a new practice would effect. Consequently the study will be written up in two sections according to the technique used with the research design given in the first section on process demonstration. Since there is only one study reviewed here there will be no summarizing section.

IIIA. THE PROCESS DEMONSTRATION TECHNIQUE

Research Design of the Study

Moeckel (63) in an exploratory study sought to discover "promising practices" consisting in techniques or subtechniques for individual on-farm instruction. Consequently the demonstration techniques dealt with here are individual techniques. Process demonstration is implicitly rather than explicitly described in the study and would seem to consist in the agent's activity in performing some task with the participant so that the participant learns how to perform the task.

The study was conducted in two phases. The first phase was concerned with discovering if there were any significant differences in teaching practices between the 148 teachers of vocational agriculture in Michigan schools for the year 1957 and a selected sample of seventy outstanding teachers of adult farmer courses in the thirteen states of the central region of the U.S. as selected by the head state supervisors of agriculture. A checklist of 125 practices which had been pretested seven times was sent to the sample and was returned by 78 per cent of the Michigan teachers and 80 per cent of the outstanding teachers. Statistical comparisons were made between the two groups for the number of teachers who had used each practice, frequently, occasionally

or never. Those who considered a practice effective were compared. There were found to be significant differences among the two groups of teachers for thirty-eight practices. All of these had been used by a higher percentage of outstanding teachers and were evaluated by them at a level significantly higher at the .01 to .05 level of confidence than by the Michigan teachers.

A list of twenty of these practices was compiled for use in the second phase of the study according to the following criteria: fewer than three-eighths of the Michigan teachers had used them but those who had considered them effective while two thirds or more of the outstanding teachers had used them and two thirds or more of these considered them effective; they were easily defined and described and would not require new or unusual teaching skills; and they were fairly specific in nature so that the teacher could easily recall their use and effect on the adult farmer. Ten of these practices were selected to be tested according to their popularity with teachers at a summer conference. The sample of the second phase of the study consisted of 95.6 per cent or forty-three of the teachers present at this summer workshop; 75.5 per cent or thirty-seven teachers who were not at the conference but who had returned the initial checklist by mail and ten teachers who had not taught during the 1957-58 school year. In this second phase of the study

each teacher selected three or four promising practices to test and received a list of suggestions early in the fall on how to perform these promising practices. A follow-up letter was sent later in the fall as an additional impulse to action. The data was collected through an evaluation form sent by mail on May 28, 1959 to the eighty-two participating teachers, accompanied by an explanatory letter. Of these 84 per cent or sixty-nine reported. The data was analysed through summarizing the promising practices according to a table and analysing the results statistically by the student "t" distribution.

Findings

Adoption. A practice which had the significant advantage, according to teacher evaluation, of the farmer learning more and adopting more practices was: "to assist the adult farmer to conduct trial plots on his farm". Most teachers also considered the farmers responded well to the use of this practice. The practice "to analyse with the adult farmer the instruction of a previous adult class as it related to his own farm" had the significant advantage that farmers adopted more practices. Most teachers found that the farmer responded well to, and learned more from, this practice.

From this description it appears that process

demonstration can be considered very close to practice techniques. However where practice seems to indicate assimilation of the information by the learner with continuous direction by the agent the very word demonstration in process demonstration seems to imply that the leadership is in the hands of the agent and he is conducting the various stages of the learning task so the learner may see how it is done. Consequently less continuous participation on the part of the learner would seem to be necessary than for practice techniques.

The fact that the process demonstration was used here as an individual technique appears incidental to the learning situation the real elements of which would seem to be that it was used in a real life situation for the farmer and his motivation to learn was high because it was possible to gear the demonstration to his own needs on his own farm. Obviously a great deal more research would be useful on this technique to establish its area of effectiveness by more objective means.

IIIB. THE RESULT DEMONSTRATION TECHNIQUE

Research Design of the Study

The result demonstration according to this study might be described as an information-giving technique to show, graphically, the results which can be achieved through varying

types of effort. There is high interaction between agent and learner in order that the learner may understand the example.

Findings

Adoption. The experimenter found four variations of the result demonstration technique which in the instructors' eyes led to the fulfilment of certain learning goals, the most objective of which was adoption. The practice to "Analyse the adult farmers DH 1A, soil test, or other farm records" had the significant advantage of the farmer responding well and adopting more farm practices. Most of the teachers felt the farmers learned more under this practice. The promising practise "Use local production standards to assist the adult farmer to evaluate his business" had the significant advantages of the farmer responding well to the practice. Most teachers also felt the farmers adopted more practices. The promising practice "Take the adult farmer to observe a new practice of another farmer"; had the significant advantage according to teachers of the farmer learning more and adopting more new practices. The practice of taking colored slides or snapshots of the approved practices being adopted by the adult farmer to show "before" and "after" effects in class resulted in better class instruction and in farmers responding well.

FIGURE 4

DEMONSTRATION TECHNIQUES PLACED ACCORDING

TO THE QUALITIES OF THE LEARNING EXPERIENCE

	1.	2.	3.	4.	5. Direct Exp.	
	lecture					
1						
2 Limited Participation poss. for some and prov. made for all					Result Demonstration	
3 Limited prov. necessary for most or all students					Process Demonstration	
4						
5						decision

Although this study relies on teacher evaluation of the effectiveness of the technique rather than more objective measures it provides useful material and suggests areas where further study might be fruitful.

III. THE PRACTICE TECHNIQUE

Organization of the Section

The principal object of the practice technique is to teach skills. Two of the experiments in this section Draegert (31), and Mason (58) deal with training men to listen in noise; one experiment, Bair and Hollander (8) deals with good and poor instructors as seen by successful candidates, and one, Townsend (82) with the effect of "packaging" a number of experimentally proven practice techniques against a package of more traditional practice techniques used as a control. The Draegert (31), Bain and Hollander (8), and Townsend (82) experiments deal with more than one practice technique and with more than one technique. They are nevertheless included here because they deal primarily with practice techniques, however, the findings may be somewhat skewed by the fact that information-giving techniques were used in conjunction with them.

Research Designs of the Studies

In the Draegert (31) experiment the object was to teach a skill, and practice techniques were used with associated techniques such as example and demonstration which facilitate skill learning. One practice technique consisted in drill in noise of words with lot intelligibility and a second practice technique consisted in drill with interphone messages in noise, with the monitor criticizing unclear speech. The procedure in both cases was for one man to read a word and then request a listener to read it back. If the reported word was incorrect the speaker said it again. Each speaker read twelve different words. The experimenter used the lecture to introduce a class practice session. The lecture consisted in a five-minute talk on the need for clear articulation when speaking in noise. The sample consisted of seventy-five student pilots. The data was collected through two types of measure: one introduced as a special exercise consisted in pre and post training records made by the students on one circuit. The experimenters then made recordings of these lists in such a way that the first and last speakings of each word by each speaker were paired. The paired words of each speaker were played to a panel of nine judges, four of whom were specialists in speech training to see if they could detect a difference between the trained and untrained conditions. The second consisted in a standard

word intelligibility test with multiple choice forms and a special test of twelve "difficult" one syllable words containing one or more of the sibilant sounds and rated of low intelligibility value. These data were analysed statistically according to mean gain by the "t" test for significance.

The Mason (58) experiment was designed to test how men are trained to listen to noise. Three treatments of the practice technique were used in this experiment. In treatment A a hand microphone was used and a monitor spoke over the interphone: "number is.....", in an aeroplane type noise. The participants wrote the word as they heard it after which the monitor held up a word card showing the correct word. After this the monitor repeated the word so the men could gain additional cues to its recognition. Treatment B was the same as treatment A with the difference that the monitors who gave the listening training were four of the eight speakers who recorded the listening test used pre and post training. Treatment C, was also the same as the treatment A except that the training exercises contained one half the words used in the training test before and after training. These were given five times each during the training and were interspersed randomly with other words. About one third of instructor time was spent on these familiar words. The training took place over three training hours with 480 words presented each training hour. The

sample consisted of 155 Air cadets in the experimental group and fifty men in a control group. Thirty-eight men were assigned to each of the three experimental treatments. The data were collected through administering the same intelligibility test before and after training and analysed by examining for significance of difference the adjusted mean gains of the different treatment groups.

Bair and Hollander (8) were concerned with the effects of teacher behaviour on learning and tested this through a course in which different techniques were used. Since the object of the course was to teach skills, practice was the main technique. Flying practice and drill are discussed. The lecture technique and process demonstration with explanation were also used. Cadets who successfully completed basic flight training in the early fall of 1951 composed the sample of the experiment. The data were collected through an assessment form which asked cadets to evaluate certain of their instructors. Cadets were not required to give their names or the names of the instructors about whom they were writing. They were asked to think of their best and worst instructors and name one incident which illustrated the attitudes and behaviour which had caused them to form their opinion of the instructor. The data were analyzed by categorizing the best and worst behaviours and constructing a frequency distribution on these categories. Only the major

categories were included.

The Townsend (82) experiment tested in a flight training course, a conjunction of techniques which had been proven to be superior in university labs, classrooms, and industry. The techniques employed and the principles on which they were built will be quoted verbatim from Townsend:

1. Distributed Practice

Practice on any one manœvre or skill was distributed over the larger part of the primary training course than is normally the case on Primary Pilot Training. This was based on the principle that practice distributed over a fairly long time is more effective than practice concentrated on a short period of time.

2. Overlearning which means, by definition, continued practice past the point where ostensibly acceptable performance has been reached. Such continuous practice is a means of making use of normally unproductive time.

3. Intellectualization of Manoevres

The student verbalizes the complete requirements of a given manoevre. This is a form of anticipatory training during briefings.

4. Talking the Students Through

The emphasis is on recognition by the students of perceptual signals or cues to be used by the student in determining whether his performance on the manoevre is correct. The students are taught to recognize error signals and then talked through appropriate corrections.

5. Proper Set. Defined in pilot's language as "keeping ahead of the aircraft". The student talked the instructor through various manoevres giving him instructions prior to the time an item of performance was actually required. This type of practice made it possible for an instructor to determine whether or not a student was capable of planning ahead of performance requirements.

6. Training for Transfer. The students attention in practice was directed towards noting the similarities between certain procedures. The author remarks that these techniques were supported by the use of devices which enabled the instructors to see where most practice was needed. (82 p.13)

The experimental sample consisted of class 53 H through 53 M in the Primary Pilot Training Program at the Goodfellow Air Force Base and the control sample consisted of classes 53 D through G. The two groups were comparable in terms of pilot stanine, radar observer stanine, officer quality stanine, age and education in years. Neither group possessed previous flying training. The data were collected by evaluating the performance of the students in the two groups at four points during the training according to objective type research flight checks administered by specially trained check pilots. These check points were: the eighteen hour and the sixty hour points of flight training in a 130 hour program, the completion of the instrument phase of the program and the completion of the total program.

Findings

Processes. In the Bair and Hollander (8) experiment the successful candidates' appraisal of "best and worst instructors" appear to relate to the instructor personality factors which were carried through whichever technique the instructor was using to achieve skill or information learning. Seventy-five per cent of the successful cadets said that their

best instructor went out of his way to help the cadet and showed a personal interest in them; 43 per cent noted that the instructor had patience, he remained tolerant, calm and composed and 36 per cent noted that he used good instructional techniques, he had adequate knowledge of the subject matter and was able to get it across. There was no mention of any specific techniques. The worst instructor on the other hand was noted for verbally assaulting cadets in 61 per cent of the reports meaning that he lost his temper and swore or screamed at the cadets; 37 per cent noted that their worst instructor was indifferent, he showed lack of interest in the cadet and in his role as instructor and 18 per cent felt the instructor used poor instructional techniques, that he did not know the subject matter and was unable to get it across.

In the Townsend (82) experiment two instructors were used for every six students in the "special package" program. The two members of the teaching team varied in rank and experience. From the results of the experiment the author concludes that the different backgrounds and experience of the teaching team ensure more effective briefings in the flight instruction and that by sharing instruction standardization is ensured.

Skill. Draegert (31) found that the experimental group improved their pronunciation of words on the standard

test to a level significantly above that of the control group at the one per cent level of confidence. All judges were able to identify the difference in pronunciation of words by the speaker as untrained and trained, to a significant degree. However the judges considered some of the twelve speakers had not improved significantly as a result of training.

The findings of the Mason (58) experiment were that there were significant improvements in listener performance in noise under each of the three experimental treatments. The adjusted mean gain of the control group which was subjected only to pre and post test was 6.7; the adjusted mean gain of the general training group was 8.2; the adjusted mean gain of the group familiar with four of the speakers was 10.9 and the adjusted mean gain of those familiar with half the words was 21.7. These findings would seem to indicate that those subjected to three hours of general listening training did very little better than those subjected only to pre and post tests and that transfer of training attempts are very much less successful than training in the actual words that will be used.

The findings in the Townsend (82) experiment favour the techniques used in the "special package" primary pilot training program. At the eighteen hour and sixty hour checks the mean error scores of the experimental group were 51.59

per cent and 47.53 per cent respectively, whereas that of conventionally trained groups were 59.56 per cent and 49.32 per cent respectively. The mean error scores for the instrument and final checks were 30.00 per cent and 29.80 per cent respectively for the experimental group and 43.64 per cent and 37.56 per cent respectively for the control group. Of those the experimental group was significantly superior to the control group for the eighteen hour, and the instrument and final checks.

Summary Discussion of the Practice Technique

Description. As described by the experimenters in this section a practice technique provides the student with the opportunity to develop skills through a conscious and continuous effort to assimilate information provided by the agent on his degree of mastery of a task he is trying to perform. The kind of relationship which exists between instructor and student is an important factor in student evaluation of the technique: successful students perceive a friendly and helpful attitude on the part of instructors to be as important as instructor knowledge of content. Few experiments have dealt with instructor student relationships yet this might be an element of the learning situation which affects the degree of learning and is constant for any technique. Continuity of instructors and a small group

relationship seems to have been an important factor in the Townsend (82) experiment. It would appear that the quality and duration relationship between agent and student and its effect on the learning goal merit further investigation. A multitude of devices which simulate the real-life situation are needed for the practice technique. The samples of these experiments have been pilot training groups indicating that there is a need for experimentation with a wide variety of the general population as samples for voluntary skill learning situations. Group size was usually small to allow for continuous evaluation of each individual's performance and to allow each individual use of devices necessary for the development of the skill.

Results. The results of these experiments indicate that performance does improve with practice. Mason's (58) findings show that in terms of skill learning transfer of training attempts are very much less successful than training for the exact situation, a fact which may indicate to educators that learning within real-life or simulated real life situations has a great deal more value than in situations which hypothesize "transfer". The combination of practice techniques used in the Townsend experiment seem to indicate that continuous conscious mental effort to translate information into motor skills results in superior performance.

FIGURE 5

PRACTICE TECHNIQUES PLACED ACCORDING TO THE QUALITIES OF THE LEARNING EXPERIENCE

	1	2	3	4 Simulated	5 Real Life
1					
2					
3					
4				Mason	Draegert
5				Townsend	

These results are applicable to a very limited audience and the results for practice techniques alone may be skewed due to the fact that other techniques were included in the experiments. Townsend's (82) experiment in particular however tests this type of technique over a fairly long period. There is a need for more experimentation on practice techniques testing the best way to teach different skills and using objective means of evaluation.

IV. THE ROLE-PLAYING TECHNIQUE

Introduction

Role-playing can be used as a copy of real-life situations through which the agent can evaluate group processes in a simulated real life setting and draw tentative conclusions concerning what behaviour would be in a real life setting. It is used in this way in the Maier (55, 56) and Solem (72) experiments. In this case it is a tool through which the agent evaluates learning rather than a technique through which he seeks to achieve a learning goal.

Role-playing may also be used as a technique through which the agent causes the participant to enact behaviours which will give him practice in a near real-life situation, eliminating, to a considerable degree the problem of transfer. Mann (57) in a review of the research on role-playing defines role-playing in the following manner:

> A role-playing situation is defined here as a situation in which an individual is explicitly asked to take a role not normally his own, or if his own in a setting not normal for the enactment of his role. (57, p.227)

Thus where the agent's goal is examination of attitudes the agent may use role-playing to cause the participant to place himself in another person's shoes in order to understand the attitudes which cause the behaviours he is being asked to act out. Role-playing as a learning technique also provides the agent with continuous feedback as to how the participant has integrated learning and enables him to continuously redirect the process to achieve his goal for learning.

Research Design of the Study

Only one experiment concerned with role-playing was found. In the French (33) experiment role-playing was used to help trainers of green scoutmasters recognize the problems of these new scoutmasters. A group of five men involved in the training each took turns playing the trainer while the others played green scoutmasters. During the role-playing sessions the experimenter adopted three different roles according to the requirements of the situation as he saw it. These were: that of a green scoutmaster to test the person acting as trainer; that of a coach giving on the spot instruction while hardly interrupting the flow of training; that of a discussion leader for a discussion session of evaluating what took place during the role-playing.

The role-playing technique was used within the course method consisting of five meetings of two and one-half hours each on five consecutive days. Role-playing was used for one and one half meetings in conjunction with other techniques. These were: demonstration of the desired leadership qualities by the experimenter; group discussion led by the experimenter; and on the job training. The results were for this conjunction of techniques taken as a group. However since the other techniques were placed in relationship to the role-playing technique it seems fair to compile the results under role-playing since this is the only study that provides any data on the technique.

The sample consisted of five scout trainers at an institute or course conducted by Bavelas, the data was collected by pre-course, during course and post course observation of the particular scoutmaster singled out for experimental testing. On pre-course observation the leader under study was found to lecture consistently allowing little interaction with himself and none among the members of the group. He was found to consider the scoutmasters on an inferior level to himself and by the end of the course all but two had dropped out. This trainer, Smith, was also observed by the experimenter during the course of the institute. The first meeting of Smith's second course was observed by the entire institute and the second, third,

fourth and fifth meetings by the experimenter.

The data was analysed through the experimenter's observation.

Findings

Processes. The experimenter found that in the second and third meetings of the post training course conducted by Smith he used a wide variety of techniques which had been used in the institute and created a different atmosphere from his pre-institute course. In the fourth meeting he regressed but in the fifth meeting he returned part way to the techniques and sub-techniques used in the institute.

From the results of this exploratory experiment the experimenter formed certain hypotheses on the nature of role-playing which could be tested in further experimentation. He feels that role-playing eliminates, to a large extent, the problem of transfer since, in role-playing the trainee is practising what he will do later on. However it provides distinct advantages over learning in a real life situation since participants are not "playing for keeps" and therefore both they and the agent are free to experiment in a variety of forms they would not use otherwise. Also the trainer gets immediate feedback of behaviour and he can affect the process at any stage to move towards the learning goal.

FIGURE 6

ROLE-PLAYING TECHNIQUE PLACED ACCORDING TO THE QUALITIES OF THE LEARNING EXPERIENCE

	1	2	3	4	5
	2				
	3				
	4			role-playing French	
Full Participation	5				

Adoption. French's (33) experiment indicates that some behaviour change in terms of leadership patterns may be expected to result from use of the role-playing technique.

Mann (57), from the studies he has reviewed, using mostly undergraduates, thinks the evidence suggests that role-playing may produce behavioural and personality change although no degree of confidence can be attached to these findings. He also suggests that the effect of role-playing on the individual is related to his personality and his position in the role-playing situation. These suggestions also provide potential hypotheses on which to base future research.

V. THE CRITIQUE TECHNIQUE

Organization of the Section

This section contains studies which test the value of feedback or criticism for information, skill performance or problem-solving types of learning. The Stein (77) and Stone (78) studies are concerned with feedback on information learning; The Irwin (45) study with critique process related to skill performance and the Torrance (81) and Levi and Higgins (50) studies with problem-solving.

Research Designs of the Studies

The purpose of the Stein experiment (77) was to discover the effect on information-learning of testing the audience before a film showing with, or without, immediate knowledge of results. Two films, one entitled Measuring Instruments and the other entitled Weather Study were used.

The exam as used here is not a technique for both the exam and the feedback are incorporated into a device and no interaction between the agent and the learner is needed for direction of the learning. However the feedback which is built into the device, could easily occur between the agent and the student in another setting. Therefore the findings are relevant for techniques.

The exams considered were pre-film exams which consisted of either identical or comparable items to the post film and delayed-recall exams. Three levels of knowledge of results were given: no knowledge of results; partial knowledge of results; and complete knowledge of results. Knowledge of results under these last two conditions was effected by the use of a punchboard device for marking answers. Under the partial-knowledge of results treatment the trainee by punching a punchboard could discover whether his answer was correct or incorrect. Under the complete knowledge of results treatment the same punchboard was used

but the trainee could punch until he found the correct answer to an item. The sequence of items on the pre-film test was either ordered or random, that is the questions were ordered as items appeared in the film or, they were random, the questions being sequenced according to a table of random numbers. The seven treatments were structured as follows:

LIST OF EXPERIMENTAL GROUPS

Group	Method	Order of Questions	Pre-test & Post-test
1E IBM sheet	No knowledge of results	Ordered	Identical
2E Punchboard	Partial knowledge of results	"	"
3E Punchboard	Complete knowledge of results	"	"
4E IBM sheet	No knowledge of results	"	Comparable
5E Punchboard	Partial knowledge of results	"	"
6E Punchboard	Complete knowledge of results	"	"
7E Punchboard	Partial knowledge of results	Random	"

(77 p.)

These exam treatments were compared with the learning effects of showing the film once, or twice without a preliminary test.

The sample consisted of approximately 6034 U.S.N. seamen recruits at the Great Lakes Naval Training base. After attrition of various kinds 1853 recruits remained in the Measuring Instruments study and 1547 in the Weather Study. About 1800 men had been used to test the comparability of the pre- and post- film tests for the two studies. There were seventeen treatment groups for each film, each consisting of two intact naval companies of sixty to eighty men. These groups were equated on the basis of navy general classification test scores. Non-significant differences were found to exist on G.C.T. through analysis of variance, however the co-variance technique was used to adjust group experimental variable mean scores for the small differences that did exist on the matching variable C.G.T. The data was collected through the pre-test exam and the post-test and delayed recall exams administered one week later. There was no mention that the sample was participating in an experiment or that they would return for a delayed recall test. Four proctors were in charge of the testing situation. The data were analyzed statistically. The Kuder-Richardson formula 20 was used for post-film test scores and was found to be significant at the .01 level of confidence. Validity of the results was tested by correlating the C.G.T. with post-test scores and was found to be significant at the .01 level of confidence by the Pearson correlation coefficient. The Pearson test was found

to be significant at the .01 level of confidence for mechanical aptitude scores correlated with post-film test scores. The analyzed data were exhibited in graph form.

The Stone (78) experiment was conducted to answer the following questions with regard to a critique of performance on a previous exam: if both positive and negative information are given in a critique is this too much material for the participant to handle? Would negative information compete with rather than supplement positive information in the fixation process? does negative information given alone help fixate the right response? and, are the optimal conditions for producing temporary and permanent changes the same or different?

Several varieties of individual critique in a group setting were used to test these questions. The critiques were based on performance in a previous exam and the conditions were as follows. Condition TSO, the control: the students were informed of their initial score only. Condition W: for the items each student missed the question and the alternate chosen by him were read to him. No information with respect to other alternates was given. Condition We: this was the same as condition W except that in addition to reading the incorrect alternative, prepared material was also read which explained to the student why his choice was incorrect. This explanation did not include the correct answer (here the

experimenter recognizes some contamination of the condition may have occurred since the critiques were given in a group and some student interaction could not be eliminated). Condition R: for each incorrect item the student was read the question and the correct answer which was explained: no reference was made to the student's incorrect answer. Condition W and R: the student was read the question for each item missed, his answer and why it was wrong, and the correct answer and why it was right.

The material for each critique was prepared previously and was read to students individually in groups of eight persons. Five to fifteen minutes was devoted to each student according to the number of mistakes he made. Readers were instructed not to attempt any answers to students' questions except by re-reading the material which applied to the question.

The sample consisted of six successive classes of about forty students each on the bombs, fuses and racks section of the course for cadets in training for ratings as B26 aircraft observers at the Mather Air Force Base. The exam typically produced a normal distribution of error scores with a median of eight out of forty wrong. Failing students were eliminated from the study. The sub groups used in the experiment were matched on the basis of total scores on the exams taken earlier that day. Each of the five sub groups

was then divided into matched halves for purposes of retest, one-half within twenty-four hours and the other half thirty days later. It was possible to match the halves almost perfectly, person for person and there was never more than one error difference between matched subjects. The data was analysed through a treatment X levels analysis of variance for the overall performance on the retest as measured by total errors. Also a more refined error analysis was used through which the experimenter could examine whether original test errors were repeated, corrected or changed to new errors on retest. Chi square comparisons were used between conditions for these three measures.

Irwin (45) reports two separate experiments, the second intended to further the findings of the first. The first experiment* was designed to test student reaction to instructor praise and criticism within a critique. The critiques were held the day after each training mission between the seven-man instructor and the eleven-man student crews to critique student performance on the training mission. The first part of the two-hour critique was devoted to a general criticism on performance of the student crew as a unit,

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*This experiment was summarized in tne report of experiment two.
T.A. Irwin, A Preliminary Study of Methods for Conducting the Post-Mission Critique in a Combat Crew Training Situation. [Lackland Air Force Base, Texas. Human Resources Research Center, June 1953. (Research Bulletin 53-16).]

after which instructors met with students in their specialties to discuss specific problems. The sample was twelve instructor-student crews from a class at the Lackland Air Force Base in Texas. The data were analyzed through observation of the first, fourth, sixth, and eighth critiques. Specially prepared forms were used to code student and instructor reactions. Sound recordings were also made of the critiques and a set of categories which were thought to be important were developed and critique behaviour noted according to these categories. The data were analyzed by comparing differences in critique behaviour with student reaction, instructor perception of student reaction, and four measures of student performance.

The purposes of the second experiment were threefold: (1) to discover if the instructor training course helped modify instructor behaviour in critiques in the direction advocated during the training; (2) whether critiques so led were more effective than critiques led by untrained instructors, and (3) to discover what instructor behaviour was associated with better student reaction and attitude change. These three aspects of the second experiment will be identified as 2A, 2B, and 2C respectively.

In experiment 2A the leaders' training sessions were conducted in five meetings using the group discussion technique. Participants were asked to bring their own problems

which were incorporated into the agenda. One of the meetings was devoted to the discussion of a pamphlet entitled Suggestions for Conducting Critiques. The final meeting centred on an evaluation of a recording of one of the training groups own previous critiques.

The sample consisted of sixteen instructor crews, selected randomly from each of the four training sections. Each crew consisted of an instructor pilot, navigator, bombardier, radar operator, flight engineer, radio operator, and gunner. The data were collected by four trained observers who used a recording form which included the following categories: explanation, initiating topic, praise, specific praise, praise with explanation, praise involving comparison with previous performance, praise involving comparison with a standard; criticism, other categories on criticism paralleling those on praise, a category for relatively less important topics, and one for relatively more important topics. These observers also obtained a sound recording of each critique as in the first experiment. The inter-observation agreement was found to be high except for certain measures which had to be rejected.

The sample for experiment 2B was six trained and six untrained instructor crews and twelve student crews and for 2C the same twelve student crews. In experiment 2B a variety of forms were used to measure the effectiveness of the critique. These were "student reaction to critique";

"instructor perception of favourable student reaction scale"; and a series of attitude scales which had been found to be related to crew performance in active service. For experiment 2C a number of measures to evaluate performance were used which Irwin notes were characterized by low to moderate reliability and lack of common variance. The data were analyzed through appropriate statistical techniques.

Torrance (81) states that the purpose of his experiment was to test four separate means of conducting critiques on a problem-solving exercise designed to help air crews function better as groups.

Under the first treatment which he described as unstructured, non-authoritarian or crew-centred the experimenter tried to stimulate discussion and to encourage the members to evaluate but did not contribute to the evaluation and referred all questions back to the group. Under the second critique entitled directive or expert the locus of criticism rested with the experimenter. He rated the crew on a set of thirteen rating scales indicating poor procedures, and presenting ways of improving procedure. He analyzed the way in which the crew had reached its decision and how the members had worked together to carry out the decision; he was tactful in the way he gave advice and he accepted and answered questions as an expert. The control group was given a test which kept them busy for the fifteen-minute critique

period, and then administered the second problem-solving test. A fourth group was allotted fifteen minutes for a self critique and the fifth treatment is described as a structured non-authoritarian critique in which the experimenter guided the group in evaluating their performance on a previous test by reference to a set of thirteen rating scales and aided them in discovering better ways of performing the task, but the content of the evaluation came from the crew.

The sample consisted of fifty-seven combat air crews undergoing training at the strategic air command survival air school at Stead Air Force Base, Nebraska. Most crews were eleven-men B-29 crews, but a few ten-men b-50 crews and fifteen-men b-36 crews were included. Most of these crews had been together for four months and each had its own air commander. Each crew was oriented regarding the nature and purpose of the test, and then each crew member was asked to evaluate his own crew's performance on the last mission. After this the first of two problem-solving tests was administered. The purpose of both tests was to test common sense judgments,and the problem situations presented were fairly common place and could be solved on the basis of knowledge gained from every day life. However, the situations presented were too complex to be solved by logical reasoning within the time limit and thus required the examinees to sort

out the most critical of several elements in the situation. After the first of these tests each man was asked to make a post-test evaluation of the crew's performance on the last mission. This was followed by a fifteen-minute critique on the solutions arrived at in the first problem-solving test. After this the second problem-solving test was administered. The experimenters compiled a set of five-point rating scales to evaluate quality of solution in the problem-solving tests and using these scales evaluated the solution in terms of thirteen different considerations.

The data was analyzed by computing a problem-solving score for each crew on each problem-solving test using the scoring formula provided with the test. A performance rating for each of the problem-solving tests was arrived at by adding the thirteen ratings made by the examiner to the problem-solving score. In order to hold the ratings and scores constant for the first problem-solving test an analysis of covariance was carried out on both ratings and scores. Thus the experimenter was able to test whether variance in the second score and rating was due to the method of conducting the problem-solving critique.

In order to study the effects of structured versus non-structured treatments Torrance (81) compared jointly the crews which had participated in the unstructured non-authoritarian critique and those who had participated in the

self critique, both group discussions with those who had participated in the directive or expert critique (a lecture) and in the structured non-authoritarian critique (a group discussion). Analysis of covariance showed that the variance due to structure was significant at the 5 per cent level of confidence for both ratings and scores. Analysis of covariance also revealed that variation due to different experimenters was not statistically significant for either ratings or scores.

The experimenter further investigated relative improvement in performance which could be attributed to the different discussion techniques used. Each crew was ranked from one to fifty-seven on each of four variables which included pre and post ratings and pre and post scores. The crews were then divided into categories of most improved and the least improved and a t-test of significance was applied to the difference in critique type falling into each category.

Levi and Higgins (50) conducted an experiment to determine whether the types of critique found effective in the Torrance (81) experiment would improve individual performance and whether officers differed from airmen in improvement. A second purpose of the experiment was to discover whether Torrance's (81) results applied when the second problem-solving test was different in kind from the

first. Under treatment A the experimenter gave out evaluation form consisting of eight characteristics which research had shown to be important in the performance of group tasks. He outlined the meaning of these characteristics and stressed their importance while encouraging members to evaluate their own group performance in terms of these characteristics. He accepted questions but referred them back to the group. Under treatment B the same evaluation scale was given out and the experimenter made the same points as in treatment A regarding the importance of these characteristics for the successful performance of group tasks. He then analyzed and evaluated previous crew performance in terms of the rating scale suggesting ways for future improvement. He encouraged questions and answered them thoroughly. Two control groups were used in the experiment. One was given the survival problem-solving test and the individual survival problem and the second was given only the individual survival problem.

The sample consisted of forty-six B-29 and B-50 aircrews totalling 481 men who were taking advanced survival training at the S.A.C. Advance Survival School. Two hundred and ten of the subjects were officers and 271 were airmen. Under the study design each crew was oriented regarding the nature and the purpose of the test. The problem-solving test, also administered in the Torrance (81) experiment, was

then presented to each group. The crew had to solve sixteen long and complicated problems in a short time and the only possible solution was to divide up the problems for subgroups to solve. This was followed by fifteen-minute critiques in the different treatment groups. After the critique a "survival problem" was administered to each crew and each crew member was asked to outline in writing his solution to the problem.

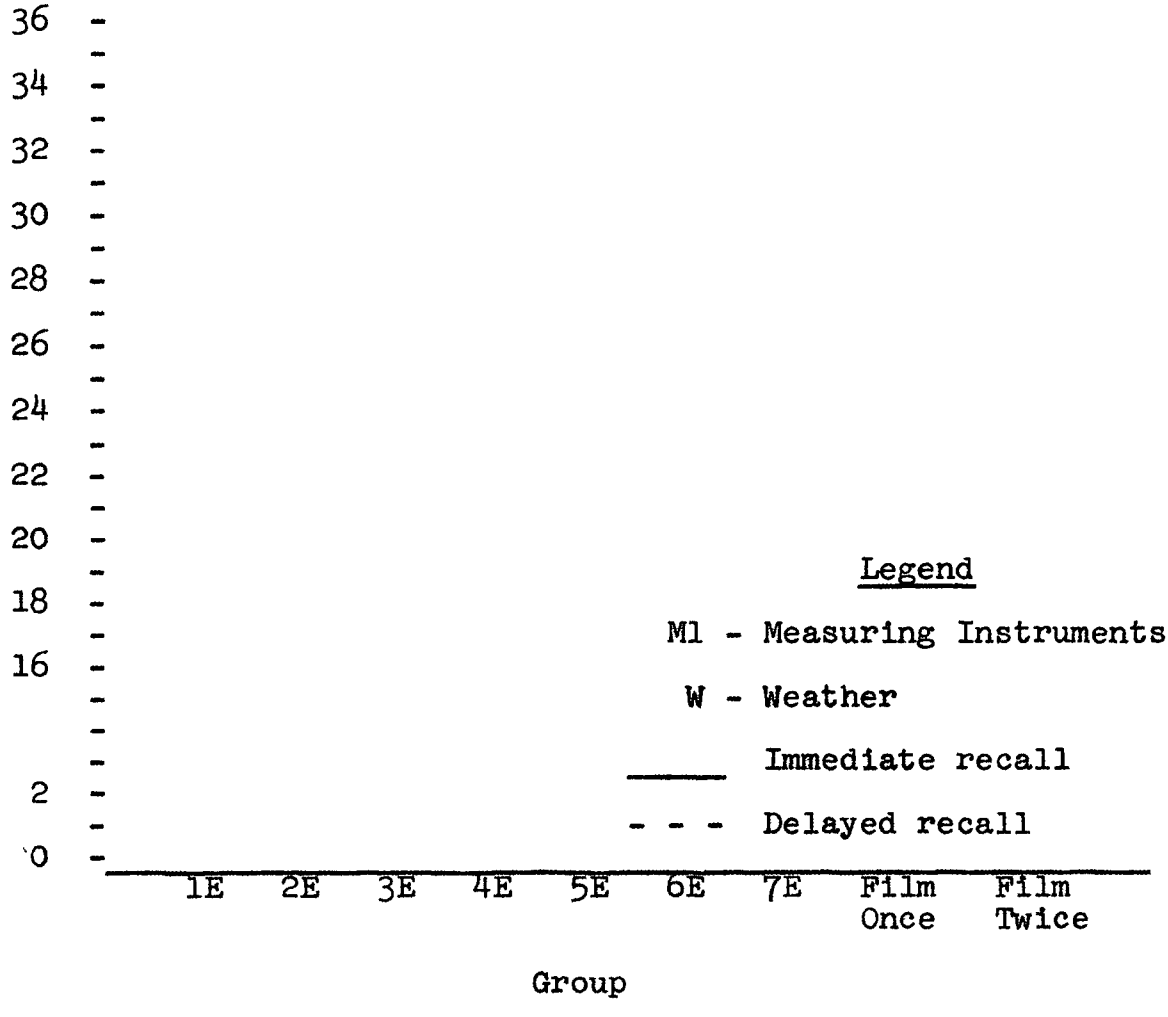
A problem-solving achievement score was computed for each crew on the preliminary problem-solving test "The Intellectual Talent's Test 701-X" and a t-test for significance was calculated for between crew differences. There was found no significant difference in initial problem-solving ability. The individual solutions to the problem which followed the critique were analyzed on the basis of content of solution for each survival problem. These individual solutions were then scored by one of the authors on a five-point rating scale for each of the group performance characteristics used as the basis for criticism in both Torrance (81) and Levi and Higgins (50) experiments. The mean total score of subjects of different groups were compared by the use of t-tests for significance. The coefficient of correlation between two analyists on the five-point rating scale was found to be .84.

Findings

Processes. Stein (77) concludes from his findings that the effectiveness of a pre-film test depends on two factors which are: giving participants items in the pre-film test identical to those in the post-film test; and giving the participant the correct answer to each item immediately after they have tried to answer it. The author does not compare experimental treatments with each other but from his summarizing graph (see Figure 7) it appears that if a pre-film test dependent on the dual factors of complete knowledge of results and identical structure to a post film test is superior on immediate and long term recall to showing a film twice then it is equally superior to all other treatments tested here except for treatments 1E and 2E in the Weather film and treatment 1E only in the Measuring Instruments film which, for some reason, though considerably inferior to treatment 3E, was slightly better than showing the film twice. Some of the results appear illogical and suggest that further research might be advantageous. For instance for the Measuring Instruments film treatment 1E is superior to treatment 2E though treatment 1E gives no knowledge of results and 2E partial knowledge and for both films the scores are lowest for treatment 6E which gives complete knowledge of results although items on pre-and post-tests are comparable rather than identical. It is also interesting to note in

FIGURE 7*

RESULTS OF THE STEIN EXPERIMENT



The immediate and delayed recall adjusted mean scores for groups 1E - 7E "film once", and "film twice" for each replication.

* (77)

connection with Trenamen's (83) findings that although the findings for each film are consistent with each other, the overall recall for the Weather film is about ten points lower than for the Measuring Instruments film, causing one to wonder if the former film contains more information.

Stone (78) found that the two treatments which included positive information showed marked improvements over the other three treatments on immediate recall and the results for the two former treatments vary little from each other. This is shown through the following table.

Means and Analysis of Variance of the One-Day Retest Errors

	TSO	W	We	R	W & R
Mean Errors	6.09	4.95	4.50	2.68	2.55

The findings at the thirty-day retest are somewhat different. At this stage there is no significant difference in reduction of error scores for treatment groups taken together and the control, or no critique. Only the W & R treatment showed improved performance over the original test and although this improvement was non-significant the W & R condition had significantly fewer repeating errors and significantly more corrected errors than the control on the thirty-day retest. The W & R was not significantly superior to other treatment groups nor they to each otherror to the control as is shown by the following table.

Means and Analysis of Variance of the Thirty-Day Groups Retest Total Errors

	TSO	W	We	R	W & R
Mean Errors	8.41	7.91	7.73	7.82	6.77

Through examination of the repeated errors, corrected errors and new errors the experimenter found that the ordinal position of the R condition has changed for every measure. In view of this finding he retested the half of each subgroup which had been tested after one day at the thirty-day level. He thus had two groups to compare at the thirty-day level, one of which had also been tested at the one-day level (RT_1,30) and one (RT,30) of which had not. The following table describes the results when the one-day retest group was again retested at the thirty-day level.

Means and Analysis of Variance for Retest of Total Errors of the Day-One Group

	TSO	W	We	R	W & R
Mean Error	7.71	7.81	7.76	5.71	6.00

The findings were that for both RT_1,30 groups and RT,30 groups the results were nearly the same for all treatments but the R condition. For the R condition the ratio between the two groups was significant at the .02 level of confidence.

The author considers that this data would imply that where positive information alone is given in connection with wrong answers (R treatment) that greater loss of desired knowledge results at the thirty-day level than where negative information alone is given and particularly where negative and positive information are given. However this deterioration of correct information on the part of the R group can be largely prevented by submitting this group to a retest at the one-day level.

The author suggests that his findings provide hypotheses which should be tested by further studies. These are that: where positive feedback only, and positive and negative feedback, are tested for results, both being the same age and strength, the latter will be found more effective in creating retention of facts; and that given the positive feedback only condition, it will be found that retention of facts is improved by additional practice of the correct responses shortly following the initial feedback.

Although the data does not support either of these hypotheses directly, the experimenter considers that comparisons across groups support one or other or both of these hypotheses better than they support the alternative, that the observed differences can be attributed only to chance.

Irwin (45) in his first experiment found that while results with regard to the characteristics of instructor

praise and criticism were not clear-cut students seemed to accept criticism better when instructors referred precisely to the behaviour which they were criticising. The study also suggested that when the instructors explained the reasons for the criticism the students were able to accept it more readily. Furthermore, students reacted negatively to long critiques.

In Experiment Two A, he found that, in comparison with control groups led by untrained leaders, experimental groups led by trained leaders had greater student participation, that instructor praise and criticism was explained in a significantly greater number of cases and significantly more time was devoted to important topics and significantly more topics were discussed than was the case with control groups.

In both Experiment One and Experiment Two it was found that more praise in the critique produced more favourable student reaction. The proportion of praises to praises and criticism varied widely and was significantly and positively related to the mean crew rating by instructors. Thus, crews rated as below average by their instructors were subjected to three or four times as much criticism as those positively rated. Since, as the author points out, at this level air force personnel are highly educated and highly selected the fact that an instructor has to criticize, as well as praise, probably should not affect his rating of the crew

severely and his rating of the crew should not affect his critical attitude toward them to these proportions. In general terms this finding appears to indicate that in structuring a critique on group performance the agent must become aware of the elements which restrict his ability to operate objectively within the technique. Since in the Bair and Hollander (8) experiment the authors discovered that successful candidates rated low, instructors who concentrated on criticism rather than on constructive remarks, further experimentation might be directed to the effect on performance of varying amounts of instructor praise and criticism.

In experiments Two B and C instructor praise and criticism were significantly related to inter-crew coordination measures so that a higher ratio of praise related to previous performance or to a standard was associated with a greater number of positive personal relations in the crew. A higher ratio of praise to praise plus criticism was associated with a higher number of inter-communications among the crew. Irwin (45) also found a significant relationship in both studies between a greater number of criticisms and a higher proportion of praises to praises and criticisms and poorer radar bomb scores, more praises were associated with lower, better control time errors. He can find no apparent explanation for these results.

The finding that performance of the experimental

group was affected in terms of inter-phone crew co-ordination measures where there was greater overall anticipation and fewer positive personal relations in the experimental than the control group indicates according to the experimenter, that perhaps, where informed conversation takes place in the critique, there is no need for it in flight. Consequently, such critiques may free airmen to concentrate on their jobs in flight. The number of instructor criticisms was found to be positively related to the number of positive personal relationships in action and the author hypothesized that crews are encouraging themselves when instructors are negative. When greater time was spent on less important topics lower instructor ratings and lower crew cross knowledge (meaning crew members' knowledge of each other's specialties) but better radar bomb scores and control time errors resulted. When more time was spent on important topics instructor rating of the crew was better and crew cross knowledge was better but there was no relation to radar bomb score or control time error.

Since the instruments used to measure student performance in experiments Two B and Two C were characterized by low to moderate reliability this factor may account for the peculiar findings associating better radar bomb score and better control time error with what would appear to be poor discussion process.

Crew cross knowledge was also negatively related to student talking time. Irwin (45) hypothesizes this may mean that crews which talk proportionately less during the critique learn more about each other's specialties. Or it might mean that crews lower in cross knowledge at the end of the critique were also lower in cross knowledge at the beginning and that they made good use of the critique to seek clarification. This may also indicate that greater student talking time indicates less important topics are being discussed. Some type of analysis which would indicate the relationships of these findings to each other is indicated.

In experiment One there was found to be a consistent though not significant trend associating student participation and favourable student reaction. In Experiment Two the correlation was primarily not significant and there did not seem to be any particular trend between student participation and favourable student reaction, instructor perception of favourable student reaction and student attitude change, with relation to student participation. One instructor crew got better participation by putting the student crew more or less on trial which might account for lack of favourable reaction to higher participation.

In both studies it was found that a greater percentage of student talking time was positively related to instructor's perception of good student response to the

critique one. It was also found that more time taken until the first student-initiated topic was significantly related to better crew rating by instructors.

If student talking time and student participation are the same thing, or comparable, then, even though student talking time results in less cross-knowledge, it creates favourable student reaction (discounting the crew which participated because they were put on trial by the instructor crew). Since instructor's perception of good student response was also significantly related to participation it might appear that neither student satisfaction with the course nor instructor perception of good student reaction are good indicators that good discussion is taking place.

It appears that some form of analysis such as the cluster analysis used by Davis (27), could have been used to test the relationships among the different findings in this experiment. Since the findings are apparently independent of each other and, in some cases, even seem to be in conflict with each other the agent has little opportunity to plan a learning task systematically, on the basis of these results. However, Irwin's (45) research should prove very useful in giving direction for further study in the area of critique process and results.

Information. Stein (77) found that a pre-film test which has identical ordered items to a post-film test and

which gives participants the complete answers to questions after they have attempted to answer them, produces significantly better information learning on both immediate and one-week-delayed tests, than a film shown once or twice in immediate succession. He found that for the experimental group both the upper and lower 30 per cent in intelligence, as tested by the C.G.T., were superior to those submitted to one showing of the film only. Moreover, content learning of material not covered in the pre-film test was as great for those who took the pre-film test as for those who saw the film alone.

The patterns of scores for the two different films were highly similar.

Stone (78) found that by the F test of analysis of variance of group means each treatment group improved significantly over zero at the .01 level of confidence at the one-day retest. Also the two treatments containing positive information showed marked improvement over the other three treatments at this retest. The only treatment which showed significant improvement over the control at the thirty-day retest was the W & R treatment in which the student was given full information as to why each incorrect answer was incorrect and what the correct answer was. However, this treatment was not significantly superior to other experimental treatments. The treatment for which positive feedback

alone was given produced results equivalent to those of treatment W & R when submitted to a one-day retest.

Problem-Solving. Torrance (81) found no significant difference between the expert critique and the structured non-authoritarian critique in instituting behaviour change in problem-solving. The expert critique produced significantly better problem-solving results at the .001 level of confidence in comparison with the non-authoritarian critique; at the .01 level of significance with no critique; and at the .02 level of significance with the self-critique while the expert and structured non-authoritarian critiques taken together were superior to the other three treatments at the .02 level of confidence. The unstructured non-authoritarian critique and the self-critique appeared to have no superiority over no critique. However, the experimenter comments that, in actual practice, some of the crews making the most outstanding improvement were self-critique crews. This finding was not part of the experiment. He concludes that in single-trial, immediate-performance critiques most crews require enough structure to assure that the discussion will cover the relevant material.

Levi and Higgins (50) found that both the structured permissive critique and the expert critique resulted in problem-solving scores and ratings significantly higher than the two control group solutions at the .01 level of

confidence. It should be kept in mind that these findings are for a problem-solving test, different in kind from the preliminary problem-solving test and individual in nature. Hence these results extend the significance of the results of the Torrance (81) experiment.

Levi and Higgins (50) further found that the officers of the two experimental groups had significantly higher scores than the officers of the control groups ranging from .01 to .001 levels of confidence. Airmen of the experimental group also had higher mean scores than airmen of the control group. Further, the officers of the two experimental groups received significantly higher scores than the airmen of the same groups, while the officers and airmen of the two control groups received similar mean scores. The fact that the officers learnt more than the airmen would seem to indicate that a psychological factor is affecting both the lecture and the structured group discussion process. The experimenters suggest that the airmen do not pay as much attention as officers to the critique because they are accustomed to getting the necessary information from their officers. This implies that the airmen did not engage themselves in the learning to the same extent as did officers who felt the main responsibility for problem-solving performance. This would lend support to the theoretical framework substantiating the Newberry scale since it indicates that the

individual must be ego-involved before he will learn.

Attitude. Irwin (45) found that the results of Experiment 2B were that the experimental and control groups did not differ significantly in terms of student reaction, in instructor perception of favourable student reaction or student attitude change.

Adoption. There were no definitive relationships between experimental treatment and performance measure in the Irwin (45) study. It should be noted however that his findings or lack of findings may be due, in part, to the fact that in both experimental and control groups instructors were both trained and untrained with the balance in each group towards the experimental or control condition.

Torrance (81) in an investigation based on his experiment but which was not part of it found that the crews making the most outstanding improvement in practice were self-critique crews.

Summary Discussion of the Critique Technique

Description. As described by the experimenters in this section the critique technique consists in the provision of instructor feedback on information, skill or problem-solving learning. This research indicates that the critique is most successful in achieving short-term information or problem-solving goals when used as an information technique

with the direction of the information-giving in the hands of the instructor. Ego-involvement may have been achieved outside the context of a highly structured critique through previous learner involvement in a test of some sort and desire to know the results. However, there seems to be some extra-experimental evidence in the Torrance (81) experiment that crew self-criticism may be more effective than leader criticism when the goal is better group performance and when the crew has worked together three to four months previous to the experiment.

It would appear that immediate and complete feedback as to the correct answer on exam items is the most effective way to get improved results when the goal is a higher number of correct answers and the pre- and post-test are identically structured. However the findings are somewhat unexpected when there is no feedback, partial feedback or complete feedback with non-identical items on pre- and post-tests and suggest that in some cases there is greater learning from the former than the latter. Further experimentation with these results would seem essential for purposes of comparing different treatments with each other. At the present time the only positive conclusion which can be drawn is that a critique giving complete knowledge of results on an identical-item test to a post-film test is superior on immediate and one-week recall to showing a film twice. From the Stone (78)

experiment it seems that feedback indicating why wrong answers were wrong and feedback indicating both why wrong answers are wrong and why right answers are right, achieve superior results at the thirty-day retest level to critiques giving positive feedback alone. However when positive feedback alone is given this can be frozen by a one-day retest so that results of the thirty-day level are equivalent to results for a positive and negative feedback.

It seems that instructor praise and criticism is related to student reaction, but how reaction is related to performance is not known. Praise and criticism within critique is also directly related to performance but the relationships were non-logical on the basis of the present evidence and more experimentation into the inter-connections among critique process, student reaction and crew performance is indicated. However the fact that crews rated low by the instructors were subjected to a great deal more criticism than highly rated crews, indicates that future study of the relationship between amount of instructor criticism and consequent crew performance might prove useful. It would be a pity if criticism affects performance adversely when pilot crews have been highly pre-selected for ability to perform. Apparently instructor training results in superior discussion in terms of time devoted to important topics and more topics discussed. The evidence also suggests that there is an

inverse relationship between the number of problems related to flight covered in the critique and crew interaction in future flights suggesting, according to Irwin, that such discussion frees the crew of problem-solving during flight and enables them to get on with the task. The size of group for the critiques on performance was very small but for the informational feedback device was very large. The sample was limited to airforce and seamen and further experimentation on critiques with other groups might prove fruitful. There was no investigation of process in group problem-solving critiques. Such intra problem-solving processes might well be the subject of further inquiry.

Results. The results for the first three studies in this section are closely tied in with process and therefore, summarized under the description of the technique.

Findings of the Torrance (81) and Levi and Higgins (50) experiments indicate that a structured information-giving critique produces the best results when the critique criticizes immediately prior group problem-solving performance and the results are judged either on an immediate group post-test, which is the same in kind as the pre-test, or an immediate individual post-test, different in kind from the pre-test. However Torrance (81) found that some of the crews making the most outstanding improvement on long-term performance were those who criticized themselves though, as

FIGURE 8

CRITIQUE TECHNIQUES PLACED ACCORDING TO THE QUALITIES OF THE LEARNING EXPERIENCE

	Abst.	Semi-abst.	Somewhat removed	Relating to direct exp.	Real life content	
Little participant	1.	2.	3.	4.	5.	
	2.					
	3.			Stein Stone Torrance) Levi &) lecture Higgins)		
	4.			Torrance) Levi &) group Higgins) discussion	Irwin	
Full participant	5.					

remarked on earlier, this finding was extra experimental. It implies further experimentation might produce interesting and valuable results.

The paucity of experiments in this section in itself indicates that there is much room for further experimentation into the process and results of feedback techniques. In particular there is a need for testing the long-term results of such techniques for all types of learning.

VI. GROUP DISCUSSION

Introduction

The group discussion technique is one of the most popular techniques in adult education. It has been studied more extensively than has any other single technique but the results of such research are varied and do not supply any clear cut answers to the effectiveness of the technique as an instructional process.

The group discussion technique should not be confused with the discussion group method. The method is a way of organizing people for learning. Verner (85) describes the discussion group as:

> a learning situation which conforms to the characteristics and societal processes of a group so that learning is achieved in the group as a unit as well as by individual members. The responsibility for learning is shared by the group members and the

> agent. The duration of the activity will vary with the nature of the content and the purposes of the group. (85 p.15)

As a technique for instruction, group discussion has been defined in a variety of ways. Anderson (2) analysed statements about group discussion by twenty authors and concluded that discussion consists in:

> that process of sharing information and opinion which occurs when members of a group think and talk together in a logical manner about a mutual problem under the direction of a leader. (2 p.23)

In spite of his definition Anderson includes as group discussion a variety of related techniques such as: question and answer for large information-giving sessions, panel discussion, lecture-forum techniques and, indeed, appears to refer very little to the small face-to-face discussion situations which normally characterize discussion.

The research reviews here are characterized by confusion and divergence with respect to the process of group discussion. These studies tend to concentrate on the goals sought rather than on the characteristics of the process, therefore, this summary will report the research from the point of view of the goals. These goals are grouped as follows:

to achieve the acquisition of information and the development of mental abilities;

to facilitate group performance of skills;

to change attitudes;

to change behavior.

Group discussion concerned with the first two of these goals might be termed Group Discussion Centred Around Outside Information; with the third goal Permissive or Group-Oriented Group Discussion, and with the fourth Group Discussion-Decision.

The studies of group discussion reported here have used the technique within the setting of a variety of methods ranging from the class to the discussion group. Many studies purporting to use group discussion actually used other techniques.

VIA. THE GROUP DISCUSSION TECHNIQUE WHEN CENTRED AROUND OUTSIDE INFORMATION

Organization of the Section

The studies in this section fall into three sub-categories. The first seven studies namely: Kaplan (46), Hill (41), Hadlock (37), Brilhart (19), Davis (26), Davis (27) and Liveright (54) are concerned with the group discussion technique as used within the discussion group method which is sometimes called Study-Discussion. The group discussion technique under this method is used consistently

with certain devices over a period of ten or more meetings with a volunteer leader usually in charge. The method, study-discussion seems to appeal to a somewhat special clientele and hence it will be interesting to compare the results for these studies with the results for the Wilsey (89) study of group discussion with a different clientele used for three meetings and the Carlson (22) and Palmer and Verner (66) studies which compare group discussion with the lecture technique in achieving informational learning goals for a compulsory audience for a six-week training course and a five-week's course respectively.

Research Designs of the Studies

The purpose of the Kaplan study (46) was to discover whether participation in a discussion group affected intellectual growth, civic participation or continued study. The study-discussion programs used were World Affairs are Your Affairs, An Introduction to the Humanities, Ways of Mankind, and World Politics. Five social scientists collected the data in direct personal interviews with a representative random sample of 150 participants and fifty leaders of study-discussion groups meeting in adult education centres in the Los Angeles area. Data were gathered also from the directors of test centres, through observation of group meetings, and through documentary data on file at the centres.

The data were analysed in percentages only.

Hill (41) sought to compare the effectiveness of a lay-led discussion method using the group discussion technique with a professionally led class method using the lecture technique with regard to: the development of mental abilities or skills, changes in values, interest, or attitudes, and increased knowledge. He describes group discussion as used within the Ways of Mankind program in the following manner:

> The Ways of Mankind, when conducted as a discussion program consists of eleven two-hour sessions, each one being focused on a particular subject by the presentation of a half-hour recording. The readings are divided into sections which are organized around the problems dramatized in the recordings. Participants are expected to read this material prior to the meeting of the discussion group. The usual procedure is for playing of the record to proceed any discussion. The leader then opens the discussion by reference to the recording or the reading material. A carefully prepared discussion guide is available for the leader's use. (41 p.7)

This study involved only the Ways of Mankind study discussion program sponsored by the Extension Division of the University of California at Los Angeles, and the sample included twelve discussion groups ranging in size from twenty-five to twenty-eight participants. The lecture groups consisted of one large group of 233 and two small groups of twenty persons each. Four hundred and eighty four of the 576 completed the first questionnaire and 288 of the possible 576 completed the second questionnaire. To collect his data,

the experimenter administered two questionnaires which included six attitude scales, using one at the first meeting of each group and one at the tenth meeting. Personal interviews and the direct observation of study groups were also used in collecting the data. Fifty per cent of the participants were present at the tenth meeting of the course and the favourable bias that may have resulted from their response should have been partially or wholly corrected by the responses of the sample chosen for the second wave of interviews which included both those who had dropped out and those who had stayed in the program. Specifically two discussion groups were chosen for the post interviews, one of which had maintained a high level of attendance, and the attendance level of the other had dropped to less than 25 per cent of the original group.

Hadlock (37) and Brilhart (19) were interested to see if mental abilities could be developed through group discussion. Hadlock (37) stated that his purpose was to discover if individuals increase in ability to think critically as a result of participating in study-discussion groups on World Politics. The definition of critical thinking was used for the study notes: "The process of thinking may be said to be critical when the person consciously strives to arrive at conclusions which can withstand the examination of other

minds"* or, as the experimenter paraphrases it in simpler language, "The process of arriving at conclusions after considering known facts about a problem." (37 p.2)

The method rather than the technique is described here, but the statement gives some idea of the technique. The method consists in a series of meetings in which participants are urged to actively engage in an exchange of ideas. There were two discussion leaders per group who had previously participated in world politics discussion groups and were trained on the recommendation of fellow participants. The original sample consisted of fifty-four participants from six different World Politics study discussion groups. The age of the participants ranged from twenty to sixty years, and the educational background from less than highschool to Ph.D. level. As a measure of the kind of participants involved in the experiment, the experimenter states he found from tests that participants were as good at reading and better at vocabulary than college seniors. The data were collected through standardized tests administered before and after the program. These included a test of critical thinking; an English test to measure the level of comprehension and vocabulary in reading; and

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*This definition comes from Instructor's Manual for the Test of Critical Thinking. (The American Council of Education: Washington, 1951).

Sanford's and Older's Short Authoritarian Scale derived from the Berkley F Scale. The critical thinking test was also administered to a control group in order to assess the effect of taking the test twice. The second or post series was administered only to those who had attended seven or more sessions of the program. The final sample consisted in the thirty-eight persons who completed pre- and post- series of tests. The data were examined by subjecting the tests to statistical analysis, in order to measure the significance of the difference between the pre-test and post-test scores.

The central purpose of Brilhart's (19) study was: "to discover the relationship between modes of evaluation and associated behaviour of participants in study discussion courses." (19 p.257) The meaning of this statement is clarified by the author who defines evaluating as: "The entire process of perceiving, interpreting and judging. It includes levels of activity both conscious and unconscious." (19 p.257) A distinction is made between conditional and unconditional evaluation. Conditional evaluation means that the subject differentiates what he is saying about a subject from everything that could be said, that he recognizes his personal involvement in the subject matter and the limitations of his knowledge. Unconditional evaluation means that the subject identifies what he is saying about the subject with everything that could be said, he oversimplifies

problems and does not recognize the personal quality of his own solutions.

The sample groups consisting of two American Foreign Policy groups, and two Great Western Faith groups, one Economic Reasoning group, and one Ways of Mankind group, were chosen according to their time and place of meeting and were located between seventy and 120 miles from the Pennsylvania State campus. The data were collected through observing, where possible, the initial two, the middle two, and final two meetings of each group. Observers used the Bales Interaction Process Analysis form revised to include categories which distinguished the conditional and unconditional evaluating behaviours of participants. These categories of conditional and unconditional evaluation are termed the Index of Critical Evaluation. Further data was collected through administering the Watson-Glazer Critical Thinking Appraisal Test and through interviews. The data were analyzed by descriptive and non parametric statistical comparisons. The experimenter took the Spearman Correlation for all persons between rank on the Index of Critical Evaluation, and the Watson-Glazer pre-test score, and found that it was .20 which is not statistically significant but occurred in the expected direction. He concludes that in the main these tests can be said to indicate different ways of evaluating behaviour.

Two studies (26,27) for which Davis of the National

Opinion Research Centre was Senior Research Officer, were concerned with participation in the study discussion program sponsored by the Great Books Foundation. Some findings from these studies are relevant to examination of research on techniques and will be discussed here. Davis (26) describes the technique used in the Great Books' discussion program as group discussion based on prescribed readings. These readings are arranged in yearly units and one group may carry on for several years if it so desires.

The sample for the first study (26) was a probability sample drawn from Great Books' discussion groups which were meeting in metropolitan areas and countries outside metropolitan areas that comprised the National Opinion Research Centre's primary sampling units in November and December of 1957. The sample aimed at 50 per cent of first-year group participants, 30 per cent of participants from years two to four, and 20 per cent of participants from years five or more. With respect to the areas from which the sample was taken, the author feels that the data tended to over-estimate the proportion of Jews, Democrats, and non-married in the program. In a general description of the kind of participant attracted to the Great Books' study discussion program, he states that they tend to be:

> highly educated, quite married; somewhat female; disproportionately professional men, and women with white-collar husbands; infrequently 'intellectuals'; under-mobile; possibly disproportionately irreligious;

> possibly underproportionately Catholic; sociable; joining Republicans and Democrats. (26 p.25)

Davis (26) found his sample could be described as an: "elite of talent, technical skill and intellectual training" (26 p.26) but not as people of great power in society or as the ivory tower concept of the intellectual. Participants in other study discussion programs considered here would also meet the conditions of this description, hence it can be seen that study discussion programs and the group discussion technique as used within it appeal to a somewhat special clientele.

The author collected his data by a questionnaire and analysed them mainly by percentages; however in some cases advanced statistical techniques and tests of significance were used.

The purpose of Davis' (27) second study was to discover why some great books groups retain their membership while others lose participants. Retention of membersnip would seem to be one measure of whether the technique used by the agent was meeting the needs of the learners, consequently this study is relevant to a review of the research on techniques. The data from the previous study were utilized and new data was collected by questionnaires sent to leaders, and informal questions to community co-ordinators of the program. By means of these last two procedures he was able to determine the continuing status in the program of 92 per cent of the 1909 members of 172 discussion groups used in

the original sample. Parts of the original data were re-analyzed and the author states that by using the actual drop-out data and the statistical control on this material he gained a much more adequate picture of the program. The data were analyzed through a complex statistical technique known as cluster analysis. Through this procedure each respondent received two scores for each variable studied, for instance, each male was coded not only as a male but also in terms of the proportion of members of his group who were male. By analyzing the data for men and women separately it was possible to look for the effects of sex as an individual attribute, and also the effects of the sex composition of the groups. The dependent variable was not the structure or pattern of inter-action of the group at a given time, but rather its loss or retention of membership over a period of a year.

Liveright (54) further defines the discussion method as used by the Great Books foundation and indicates how the technique is structured within the method. He notes:

> that the concern of the program is with the thoughts and ideas of great thinkers; it is broad in regard to the ideas of men studied but limited to readings about them; there is some concern with applying the ideas given to contempory problems, but the main focus is on understanding the concepts themselves. The program is complex in terms of the ideas discussed but rigid in the type of leadership allowed. The program and the leadership style is fixed by the Foundation and there is very little variation allowed. (54 p.39)

Wilsey (89) investigated three levels of group discussion training to discover whether the level of training affected the amount of information learned about the subject; the amount of information learned about the group discussion process; the actual process of group discussion; the action patterns of participants regarding the subject; and the observed satisfaction of participants with the process. All participants were given material on safety education and on how to participate in group discussion in advance of the experiment, so the devices used were a constant factor. Three of the nine Home Demonstration clubs used in the experiment had had three of their members trained as a leadership team in a seven and one-half hour leadership course in which emphasis was placed on the duties of the leader, co-leader and observer in the group discussion process. Three other clubs had had almost all their members (a few did not go to training session) trained as responsible participants. The third group of three clubs had received no training.

The sample consisted of three urban, three rural and three mixed urban and rural Home Demonstration clubs totalling 139 members in a single county. The membership in the mixed urban and rural clubs consisted of young women whose age averaged in the mid-twenties whereas the average age of those in the other six groups was the mid-thirties.

Two questionnaires, one on home safety knowledge and

one on the principles and practices of group discussion were administered at the beginning and end of the three meetings. A non-language intelligence test was administered also to check the mental ability of participants.

The author found that prior to the experiment the three place-of-residence groups were from the same population in terms of mental ability scores, group discussion knowledge and home safety knowledge. The author observed the group discussion meetings and measured the quality of discussion with a ratio scale. Participants also evaluated the process by means of a form. At most of the twenty-seven meetings held under the experiment the attendance ranged from nine to seventeen with extremes of four to twenty-four. Each club had three meetings on home safety knowledge and covered the same material. The data were analyzed by analysis of variance and co-variance techniques. The Chi-Square Test of K independent samples and the t-test of significance were also used. The results were presented graphically.

The Carlson (22) experiment compared lecture and group discussion for teaching a test and measurements' course where the criteria of success were: overall achievement, information, ability to apply information, mathematical skills developed, and degree or interest for further study that was created. He describes his use of the group discussion technique as being directed by the instructor who developed the

subject around student contributions. The lecture technique was tested in a large section and in smaller classes comparable in size to those used for the group discussion technique. The study design provided for six instructors in the experiment each of whom used lecture and group discussion techniques separately and two combinations of the techniques during a six week Air Force Instructors' course. The sample, nearly all male, was found to be comparable in terms of aptitude, military rank, previous teaching experience, level of civilian schooling, training in mathematics and former training in tests and measurements. The data were collected through subject matter tests; comprehensive achievement tests; and an interest inventory. Professional educators acted as observers to the different sessions to report the success of each instructor in pursuing the lecture technique, the directed discussion technique and the treatments in which the techniques were used conjointly. The data was analyzed through an analysis of variance and co-variance and standard deviations.

Palmer and Verner (66) hypothesized that there would be no statistically significant differences at the .05 level of confidence in student achievement as a result of courses using lecture, group discussion, and combined lecture and group discussion techniques. The authors state that the content of the group discussions used in their experiment

came from extensive out-of-class reading, however, no indication of the way in which the discussion process was directed is given. The lecture technique consisted in a forty-five minute presentation by the instructor without interruption followed by a five-minute question period. This was a deviation from normal class procedure where lectures were interrupted by frequent questions. The lecture-discussion periods were conducted by giving each technique one half of the class period. Sometimes the lecture technique was used first and sometimes the group discussion technique was used first. The techniques were tested within six classes, two to each treatment, in a course on Aviation Physiology. Classes were fifty minutes in duration and held each day, five days a week for five consecutive weeks. Participants in the three groups showed no statistically significant difference in initial aptitude when tested by the verbal and quantitative sections only of the Air Force Officer Qualifying Test. The sample consisted of 130 officers and cadets nineteen to twenty-seven years old whose educational qualifications were high school to college graduation. All were comparable in terms of minimal mental and physical health qualifications. They had received the same academic, flight military and physical training, and all were volunteers for pilot training. The data were collected through a fifty-item true or false test which was administered

on the first and last days of the course. The data were analyzed through the t-test for significance, which was applied to the scores achieved by the three groups. In order to discover which technique appealed most to students the primary pilot-training, school, standard form for written critique of courses was administered and two items on this form were scaled for the purposes of study. Later an oral critique was conducted to discover why participants expressed greater satisfaction with lecture discussion meetings.

Findings

Processes. Almost two thirds of the respondents in the Kaplan (46) study felt that the most important differences in viewpoint were generally developed in the group discussions whereas one third did not think so; a majority felt that either a few or up to 50 per cent of the group members dominated the discussion while others spoke little; 75 per cent felt that participants expressed their views freely whereas 25 per cent felt they did not; 60 per cent reported that participation was better in late than early meetings.

The interviewers who observed the groups in action noted that one third to one half of the participants shared in the discussion fairly regularly and that eighty per cent participation was quite regular in one or two groups. A general observation was that in too many groups the leaders

wanted participation at any cost regardless of the quality of discussion. Three of the five observers reported that there was much less tendency for groups to go off on a tangent in latter as opposed to former meetings. It was reported that in two or three groups there was excellent progression in terms of developing ideas to their logical conclusion and in comparing and building conclusions.

Hill (41) in comparing the group discussion technique with the lecture technique, found that a significant number of participants thought that discussion was more informal, less academic and that it allowed for more interchange of views than did the lecture.

Brilhart (19) through use of his adaptation of the Bales Interaction Process Analysis uncovered a syndrome of characteristics which occurred with relatively high group indices of critical evaluation and when a high proportion of individual indices of critical evaluation increased from early to late meetings. These are: a high degree of satisfaction with the leadership; meetings that last almost the full two hours; a low number of scores per minute; discussion of from seven to twelve topics per meeting; and a high proportion of the topics related to the readings. Individual group discussions however were found to vary widely on the index of critical evaluation from topic to topic. In further analysing the discussion process, the experimenter notes that

differences with the opinion previously expressed in the discussion were significantly more often followed by agreement and less often followed by disagreement, than were identifications with the opinion previously expressed. He therefore hazards the guess that giving and withholding of support may be the major source of the increase in individual indices of critical evaluation which occurred in most groups. When considered as a group,participants who increased their index of critical evaluation showed a considerably higher percentage of requests for evaluation and procedural suggestions than those whose index of critical evaluation decreased, which perhaps indicates that the change is also due to initial qualities of the participants. It also suggests that where the leaders encourage the group to evaluate the discussion and to control the flow of discussion the group will improve in its ability to think critically. The author also noted that the kind of evaluating done by non-leaders appeared related to the structuring of the questions by the leader.

Davis (27) was interested in the process of group discussion and examined the relationship of the social roles of participants to their group discussion behaviour. The questionnaire used in Davis's second study identified three basic group discussion roles which could be described as an instrumental role, a joker role, and a harmonizer role.

Each respondent was asked to state whether he fulfilled any of these functions in his group, and also to state what two persons in the group fulfilled each of these roles. The instrumentalist was considered as a person who sought to pull the threads of the discussion together and reconcile different viewpoints, to introduce new ideas and opinions for the rest of the group to discuss, to request clarification of problems discussed, and to ask for definitions of terms and point out logical problems. The joker was conceived of as one who joked and kidded and found the humorous implications in the discussion. The harmonizer was described as a person who made tactful comments to heal rifts which arose during the course of the discussion. The findings in this area were that men tend to perform the instrumental and the joker roles more often than women, and that women tend to be the harmonizers more often than men, but that married persons tend to be harmonizers more often than unmarried persons. The author considers the possibility that the findings may be the result of the specific categories named in the questionnaire, but states that even so these roles appear to be relatively institutionalized in any group, and that persons who described themselves as fulfilling any of these functions was so described by others in most cases. Other findings were that this institutionalization of roles was not affected by the age or size of the group, and persons playing any of the

described roles had a better chance than probability of playing any other of the described roles.

In summarizing Davis (27) states that the kinds of roles played in the group had no affect on drop-outs, but that the more members who were active in the discussion, the better the retention of active and inactive members. Also within groups of a given level of activity those members who were named by other members as playing an active role were more likely to stay with the program. Another factor favourably affecting retention was a large amount of outside contact among group members, for groups high on outside contacts had higher activity levels. In order to organize his findings the author related all the variables found to affect retention of membership in a group to each other. It seems that outside contacts, educational level, and political diversity, taken together create activity; moderate sociability outside the group leads to activity, and interest in local affairs leads to greater activity. In turn activity leads to intellectual changes incurring increased information, and greater activity and increased information both lead to greater retention of membership. Another chain of variables also affects greater group retention directly. The number of Protestants in a group affects directly high status of members, educational homogeneity, and democratic majority which three factors in turn affect retention. It would appear then that this

research gives the educational agent considerable material to analyze in terms of any group discussion he may wish to carry out. If the participants are like the sample here described he may be able to better predict the success of using group discussion as a relationship to be established between the learner and what is to be learned where the goal is to gain information.

Davis (27) states that although he has discovered a lot about the effects of activity and where it comes from he doesn't know what it is. He queries:

> does it tap the sheer decibel volume of the discussion; evenness of participation against domination by a few members or whether it is an index of some subtle interpersonal characteristics such as group cohesion or integration of role structure. (27 p.217)

While Brilhart (19) did not investigate the affect of outside relationships among group members on the group discussion process he did note that there were intensive and complex extra-group relationships among his participants, and that almost all the silent members were closely associated with some more vocal member. He discovered that men were more likely than women to be chosen as future leaders, since six men and two women were chosen as future leaders, and there were more women than men in the program. He made no comparison of the discussion profile of men or women however, and we do not know whether this is a carry-over from roles in the society, or whether it is a direct result of the

way particular men and women participate in the discussion process.

Davis (27) found that the proportion of group members named as actively playing one or more of the basic roles, joker, instrumentalist and harmonizer was affected by a set of compositional variables. The personal characteristics of intellectual ability and interest increase the probability that a person will be named as active. Also kinship roles seem to affect the activity level and the quality of discussion through transferring into the small group patterns of interaction learned in family situations. Sex, marital status and the roles of husband and wife, affect the behaviour of persons in the group, hence it would appear that the composition of the group will affect the success of the technique. He concludes that role performance in the discussion is less affected by the internal aspects of the group than by the role the participants play in the larger society in terms of their relationships with each other as men and women, and in terms of their outside acquaintance and socializing with each other.

Leadership. Lay leadership is used almost exclusively in study discussion programs and it has been a concern of the researchers as to how such leadership can be most effective. The research in this area should be most useful to the agent in learning how to structure the process to achieve best results.

Kaplan (46) found that college graduates were considered more effective leaders than non-college graduates by a 10 per cent margin. Non-college graduates were more critical of the leadership of the group than were college graduates and preferred strong leadership and subject matter specialists while college graduates felt less dependent on the leader. Twenty-four per cent of the total group approved of the way the leader focused the discussion and kept it on the track whereas 35 per cent did not; 15 per cent thought the leader stimulating and thought-provoking while 12 per cent considered this a weak point; 14 per cent felt that leader did not dominate or assume too much control and 11 per cent that he did; 23 per cent liked the way the leader secured broad participation whereas 4.7 per cent thought the leader was too controlling and talked too much and 15 per cent felt the leader did not know enough about the subject matter. On the subject of improving the leadership 41 per cent felt there should be competent well-trained leaders who would give more direction to the subject matter.

Brilhart (19) asked his sample to designate those persons whom they would suggest as future leaders and the interaction patterns of those so designated were then examined by the Bales Interaction Process Analysis form. He found that, in general a person chosen as a future leader, had to participate in the discussion frequently, have a high index of

critical evaluation, and do considerable organizing and requesting of evaluation. Those so chosen had more than twice the percentage of requests for evaluation, asked for information more frequently, made two and a half times as many procedural suggestions and disagreed in the discussion more frequently than those not chosen as future leaders. A combination of low participation and low index of critical evaluation almost certainly guaranteed that a participant would not be selected as a future leader. He also inquired into what type of participants were most desirable as future discussants and discovered that those chosen as future discussants participated more often in the discussions than the average; whereas those rejected as future discussants participated less than the average.

Davis (27) discovered that leader training and acceptance or rejection of discussion techniques recommended by the Great Books Foundation had no relationship to drop out when controlled for content, activity, and sociability. However there was some evidence that when the members wanted the leaders to use a specific technique and the leader did not do so the rate of drop-out was higher.

Liveright (54), in his analysis of leadership styles required for different learning purposes, found that there are a number of programs in which the goal is to both change attitudes and to convey information. He terms this an

'understanding program' and cites Great Books as an example. He notes that this type of program requires a mixed leadership style which moves from content-oriented leadership initially to group-oriented leadership laterally in order to develop the cohesive potential of the group. Strengthening group cohesion appears to be desirable because, as the membership becomes better acquainted they will wish to influence program goals, use their own resources, and emphasize problem-solving rather than information-giving content. If the leadership techniques are not flexible the naturally desired increase of group cohesion will be discouraged and many members will drop out of the program. He further states that some of the older Great Books (five- to ten-year) groups are much more group oriented in emphasis than first year groups which would suggest that such movement and change should be built into programs of this type.

Participant Satisfaction. Participant satisfaction with the technique may not be a good indicator of the value of the technique for learning but it will show what is acceptable to participants.

In the Kaplan (46) study participants most liked the exchange of views and subject matter provided by the discussion while intellectual stimulation and social aspects were also liked by significant percentages. Twenty to 30 per cent of respondents liked materials, leadership and

inadequacy of other participants least. Eighty per cent said the program fulfilled or partially fulfilled their expectations with more men than women in the fulfilled categories. The author found that there was a great difference in participant satisfaction with the different programs. Seventy per cent of world politics participants said yes their expectations had been met; as did 56.7 per cent of Ways of Mankind; 15 per cent of world affairs and 32.8 per cent of humanities participants. The rest of the answers fell into the partially satisfied or not satisfied categories.

Leaders' satisfaction with the materials provided them varied considerably and correspond with participants' evaluations of how well their expectations for the program were satisfied. Almost 100 per cent were satisfied with World Politics materials; 50 per cent with Ways of Mankind; 33 per cent with World Affairs are Your Affairs and 25 per cent with the Introduction to the Humanities.

In the Hill (41) study many discussion participants felt that the talk was trivial at times, others felt they were not able to participate in the discussion as much as they wanted to, and 78 per cent felt that on at least one occasion, one or very few members dominated the group. Thirty-five per cent of those in the lecture group asked for combined lecture-discussion in the future and 22.9 per cent

of the discussion participants asked for combined lecture-discussion in the future. Hill (41) in comparing the use of identical devices in conjunction with the group discussion and lecture techniques found that 56 per cent of the discussion participants reported that the recordings often provided the theme for the discussion, and some evidence was found that reading material had a slightly more important role for discussion than for lecture participants. The chief use of recordings under the lecture technique, was to illustrate a generalization or proposition forwarded by the lecturer.

When Palmer and Verner (66) analysed the data from the two satisfaction scales it was evident that the lecture discussion group was better satisfied with its technique than the other two groups. In the oral critique the students stated that they wanted a lecture for at least part of the class period in order to make sure of covering the important material, that they wished an opportunity to participate but if they had to choose between information and participation they would choose the former. They felt the group discussion technique using outside readings required too much extra work and they preferred a change of pace to break the monotony of lecture or discussion alone. Brilhart (19) found that group improvement in the index of critical evaluation was not related to group satisfaction

with the course, but it was related to the number of individuals who improved their index of critical evaluation within the group and in group satisfaction with the leadership. Davis (27) discovered, however, that satisfaction with the program is a factor in retention. He reports that when a high proportion of the group reports favourable effects from the program there is likely to be better retention, and there is better retention with individuals who report satisfaction with the program. Wilsey's (89) findings on the group discussion process were that there was no significant relationship between the degree of participation in group discussion and the individual participant's satisfaction with the group process, and there was no relationship between attendance at the discussion sessions and preference for the group discussion process. He found that groups with least training in group discussion indicated greatest preference for the technique although no respondents wished to go back to the former leadership training method. He found that untrained clubs did not carry on group discussion at as high a level of satisfaction as either of the other two levels of training in group discussion. These findings are interesting because the author was working with groups, the members of which lived in the same county and at the very least knew each other through participation in the same club and at most may have been high cohesive groups.

Friendships. Kaplan (46) and Hill (41) both report findings on the growth of friendships as a result of the discussion process. Thirty per cent of Kaplan's (46) sample reported that they had made new friends in the group whom they were currently visiting and 6 per cent said they were now much closer friends with people they had known previously. In the Hill (41) study 37 per cent of discussion participants reported new friendships as an outcome of participation; whereas only 6.9 per cent of lecture participants made new friends. The majority of new friends reported by the discussion group participants lived in the same general area as they did themselves.

Information. In stating how they benefited from the program of the population of the Kaplan (46) study brought out the following points: they felt that they had enriched their general knowledge, learned discussion techniques, and become more tolerant of the opinions of others in that order of priority. Approximately 30 per cent felt they had learned a great deal about the topic, 63 per cent that they had learned something and 9 per cent that they had learned very little or nothing. Non-college graduates felt that they learned more than did college graduates.

Hill (41) found that there was no significant difference between lecture and discussion sup-populations with regard to information acquired as judged by knowledge of

anthropological concepts on the post-test. On the pre-test the lecture population had a slightly higher average score than the discussion population; on the post-test this situation was reversed, although the difference in gain was non-significant. This may be accounted for by the finding that those present at the tenth meeting of the discussion groups had higher pre-test scores in anthropological concepts than those who were not present at the tenth meeting. This relationship does not seem to hold for members present at the tenth meeting of the lecture class. The author suggests that this finding indicates that in discussion groups attendance is related to previous knowledge of the subject by participants. He states further that, although the findings are only suggestive, the discussion method appears to be especially effective for females, non-professionals, and those who have never been to college. The Kaplan (46) study found that those who have never been to college preferred strong leadership and subject matter specialists. If the findings of the two studies are comparable it would seem that those who have not been to college learn most information from the technique which is least acceptable to them. Males and older persons acquired knowledge equally well from group discussion and lecture techniques, however, professional participants in lecture classes improved their test scores more than those in discussion groups.

The questionnaire used in the first Davis (26) study included a test of general knowledge in the liberal arts and it was found that while a little more than one-third scored eleven or more of the cartoon quizes correct after the first year, two-thirds scored these correctly after three or more years. In the first year group non-college participants had only 11 per cent above the median on the test whereas 76 per cent of the graduate students were above the median. With additional years of exposure to Great Books the original formal education of participants had a diminishing effect on cartoon quiz scores. The researcher discovered however that a statistically significant number of low scorers dropped out of the program. In spite of this trend, however, the data gives reason to believe that exposure to Great Books leads to increase in familiarity with the liberal arts. When this finding is related to Hill's (41) finding that those present at the tenth meeting of discussion groups had higher pre-test scores than those absent, it adds support to Hill's (41) conjecture that attendance in study-discussion groups is related to previous knowledge of the subject by participants. The group discussion process as used in Great Books does not lead to a greater generalized aesthetic taste in the liberal arts, as tested by music sophistication which is unrelated to the program, or by poetry which is related. Davis (27) also reports from his second study that there seems to be a

process whereby social interaction outside the groups lead to a high participation level in the discussions, and this in turn leads to favourable intellectual changes as measured by information gained.

Wilsey (89) found that no significant difference existed in the adjusted means of safety scores for his three-level of training groups. The six clubs which had leadership training had significantly greater gains in group discussion knowledge than the untrained group, and the three clubs in which most group members were trained had significantly greater gains than the group in which only the leadership team was trained. He found that there was no relationship between mental ability and level of discussion knowledge, however, three younger clubs composed of mixed residential groups made significantly greater gains in group discussion knowledge than the other two residential groups. This would appear to indicate that youth and variety influenced the amount of group discussion knowledge gained. He concludes that leadership training in group discussion processes may not be worth while where the primary goal is information gain in the subject matter since it does not influence the amount of information gained on immediate recall.

Carlson (22) found that no significant differences in all five criteria measures existed between members of lecture groups, members of discussion groups and members of

joint lecture discussion groups. These results were similar for students of all three ability levels.

In the Palmer and Verner (66) pre-test the lecture discussion group scored highest followed by the group discussion and then the lecture groups. While the difference between the lecture discussion and the lecture groups was significant at the .05 level of confidence there was no significant difference between either of these groups and the discussion group. The post-discussion questionnaire revealed no significant difference among the three groups which denotes a gain in achievement by the lecture group over the other two groups. These results were confirmed in that the lecture group had a significantly higher score on the fifty-item multiple choice test administered at the end of the course to determine minimal content required by the Air Force. This test also showed a gain in achievement by the lecture group. The authors note that these results were in terms of immediate recall for student volunteers who had high motivation to complete a demanding course.

Mental Skills. Leaders in the Kaplan (46) study stated that as a result of participation group members appeared able to think and express themselves more clearly. Hadlock's (37) concern was to test whether participants in his World Politics discussion groups had improved in their ability to think critically, as defined by his study. He

found that both the experimental and the control group showed an increase in this skill, however, in the case of the experimental group this increase was significant to the .01 per cent level of confidence, whereas for the control group it was significant only to the 10 per cent level of confidence making the difference between the two groups in an increased ability to think critically significant to the 5 per cent of confidence. He concludes therefore that a significant increase in critical thinking test scores resulted from participation in the study discussion program. Furthermore, there was no significant difference in the changed critical thinking scores between five different age groups studied. To test the effects of initial education on the development of critical thinking through the program Hadlock (37) divided his sample into four educational groups, beginning with group one composed of individuals who had less than two years college education, and moving to group four which contained only those with graduate or professional degrees beyond a baccalaureate degree. He found that the mean increase in critical thinking scores of these four groups did not vary significantly from the mean of the entire group. The mean of group one, however, was very much less than that of the other groups. A significant difference was found between the means of the scores of group one and group four. When the six study discussion groups used in the experiment were compared with each other, for changed critical thinking

scores, no difference was found to exist between their means. A further finding indicated that there was no significant difference between the changed critical thinking scores for those who were classified as most authoritarian and those classified as least authoritarian.

Brilhart (19) found that all the groups under study showed a rise in the index of critical evaluation from early to late meetings, and, when only non-leaders' scores were considered, five of the six groups still showed this rise. All group indices of critical evaluation for non-leaders rose from middle to late meetings. However he states that this cannot be interpreted with confidence since there was wide shifts in attendance from meeting to meeting. A more certain finding is that for thirty members who attended seven or more meetings and for whom at least ten scores were recorded in the categories of conditional and unconditional evaluation, at both early and late meetings,an increase in the index of critical evaluation significant at the .05 level of confidence was recorded, using the Wilcoxon Matched Pairs Signed-Ranks Test. Wide difference in changed index of critical evaluation were found among members of different groups, which indicates, according to the experimenter that varying conditions affect greatly the degree to which this goal of liberal adult education is achieved in a particular study discussion group.

Attitude Change. Some of the studies sought to discover whether attitude change is effected through study-discussion programs. Kaplan (46) found that 10 to 15 per cent felt they developed new concepts or attitudes through discussion and a similar percentage changed certain of their views based on the information gained in discussion or became more aware that there was more than one solution to most problems. To the question: 'do you think that members become more open-minded?', an average of over 50 per cent from the sample in all programs felt that they had; 10 per cent said some had and 12 per cent said the members of their groups had been open-minded from the beginning while 20 per cent felt it would be difficult to say. These figures again differed a great deal according to program. Participants in the study of World Politics apparently became more open-minded in 70 per cent of the cases and they were reported as least open-minded initially. Perhaps this indicates that in a controversial program lack of open-mindedness is more evident or that better materials draw out differences in point of view better, causing participants to see the validity of arguments other than their own. Hill (41) found members of both lecture and discussion groups to be slightly less ethnocentric, more tolerant of ambiguity, and more convinced of the efficacy of democratic procedures as result of participation, however, these changes in

attitude were not significant. It was found that the smaller discussion groups concluded with greater attitude homogeneity with regards to ethnocentrism than did the larger discussion groups or lecture classes but this did not hold for the measures of tolerance, ambiguity, or democracy. It was also found that attitude homogeneity as measured by the average variance, decreased for certain groups which would indicate that for certain types of attitudes the social forces in a group may influence members differently depending on their original attitude. A comparison of those present at the tenth meeting in discussion groups with those not present revealed small, non-significant, but consistent in pattern indications that drop-outs were more authoritarian, more ethnocentric and less tolerant of ambiguity than those who continued in the program. There was no comparable pattern of drop-outs for lecture participants. Hill (41) considers that these findings provide some support for the hypothesis that social pressure affects attendance in discussion groups more so than in lecture groups. Since the discussion process also seemed to discourage those with the lowest scores on anthropological concepts on the pre-test one wonders if there might be some correlation here between attitude and knowledge of anthropological concepts.

A finding, apparently resulting from participation in the program, was that for discussion group members there was a small but significant change in the development of negative attitudes towards adult education, whereas Wilsey (89) found that the smaller the amount of training a group had in group discussion the more favourable the opinion of its members towards that technique. He concludes that those who know little about the group discussion process may be inclined to overlook its disadvantages, and not to recognize that group discussion may have negative influences. Hill (41) also remarked that lack of experience with group discussion may have caused participants to be unrealistically favourable towards adult education, prior to the program.

Davis (26) in his first study found no evidence that members change their attitudes to large scale ideals in the course of a Great Books program. Those ideals tested were hedonism, contemplation, group affiliation and outward activity. Religious trends appeared to be in the direction of greater acceptance of liberal and sceptical attitudes to religion without giving up prior religious faith.

Adoption: Reading. With regard to reading habits 42 per cent of respondents in the Kaplan (46) study said the program had caused them to change their reading habits whereas 57 per cent indicated their reading habits had not changed. Thirty-three per cent of the leaders felt that

participants had changed their reading habits as a result of participation in the program. In the Hill (41) study participants under both techniques felt their reading patterns were influenced by the program; approximately 30 per cent felt they were influenced in the type of reading material they now sought and others felt they read more critically as a result of the program. Hadlock (37) found that there was no significant change in reading level of comprehension, as a result of the program. Davis (26) states that his data suggest that in advanced years the program does lead to quantitative increase in hours per week in serious reading, both in great books material and self-selected materials, but that the level of difficulty of the readings is not related to exposure to the program.

Community Activity. Another area investigated was the possible effect of participation in the program on community activity. Kaplan (46) found that only 5 per cent reported any new community activity as a result of participation in a discussion group. In interviews following the program Hill (41) found more discussion participants aware of community issues than he had found in pre-program interviews. He remarks that discussion groups were located in community facilities whereas lecture groups were university centred so that this effect may result from the operation of the method rather than the technique used within it. No

greater involvement in community issues was reported. Davis (26) in his first study discovered that his sample was highly involved in local activity and that this involvement showed little change as a result of participation in discussion. Participants indicated that they felt exposure had affected their understanding of local issues and problems, but in terms of the indices of interest in activity the author found no strong trends.

Summary Discussion of the Group Discussion Technique Centred Around Outside Information

Description. According to the research examined, group discussion is a technique in which the agent structures the learning so that participants contribute to the development of the subject matter through face to face discourse with each other and the agent in a small group. This technique differs from a forum or a question and answer session in that the interaction in the latter is almost exclusively between the questioning participant and the agent for purposes of clarification. In group discussion the exchange usually occurs among participants and the development of the subject matter comes through the structuring of group; the suggested structure of the discussion depends upon the sponsors of the method - it can be extremely flexible when sponsored by university extension departments or can have a

more rigid format as sponsored by the Great Books Foundation; the technique is used exclusively for the ten to twenty meetings held under the method.

Since group discussion is often a new technique to the participants it is interesting to note Kaplan's (46) findings that participation in the discussion appears to improve from early to late meetings and up to 80 per cent participation can be achieved. Group ability to remain on the topic also appears to improve from early to late meetings. The agent has been provided with a means of testing the success of his use of the technique when the goal is development of mental abilities through application of the syndrome discovered by Brilhart (19) to correlate with high group indices of critical evaluation and a high proportion of individual indices of critical evaluation increasing from early to late meetings. Brilhart (19) discovered as well many specific variations of group discussion process which resulted in increased ability to evaluate critically. It appears from Davis' (27) study that greater discussion activity leads to greater information gained through the discussion, and although the author is not able to say what activity is, he has isolated factors which create activity. It would be an interesting study for the future to see whether the kind of activity which correlates with greater information acquisition is the evaluating kind of activity

which Brilhart (19) has found to develop mental skills. A further finding by Davis (27) might help the agent forecast the kind of discussion he will be able to develop within the group. This is that role performance within the group appears to be highly dependent on the roles of the participants in the larger society; therefore group composition in terms of proportion of men to women, husbands to wives and the number of people who know and socialize with each other outside the group may affect the kind and amount of discussion which takes place.

Some researchers have been concerned with participant's satisfaction with the study-discussion method, and, by implication, the group discussion technique. It is interesting, therefore, to note Brilhart's (19) discovery that group improvement in the index of critical evaluation was not related to group satisfaction with the course but to group satisfaction with leadership and to the number of individuals who improved their index of critical evaluation. Davis (27), however, discovered that satisfaction is a factor in retention in which case participation satisfaction might still be a factor for the agent to keep in mind.

Since Wilsey (89) studied existent groups of Homemakers Clubs we may assume that they were to some degree cohesive groups and that members knew and had contact with each other outside the club. It is interesting therefore to note

that neither participation of members in the discussion nor their attendance at meetings correlated with satisfaction with the group discussion process. Brilhart's (19) discovery that intensive and complex extra-group relationships existed among participants and that almost all silent members were closely associated with some more vocal member and Davis' (27) finding that the more members who were active in a discussion the better retention of active and inactive members and activity in the group in turn was related to a large number of contacts outside the group would seem to relate to Wilsey's (89) findings. Taken together these results suggest that satisfaction with the process and retention in the group were related to a sense of group membership in these studies. It would be interesting to discover whether the same results in terms of mental abilities and information gain would be achieved through group discussion with non-cohesive groups. It might be pointed out that we have no indications of whether extra-group contacts made a difference to group process or learning in the Hill (41), Kaplan (46), or Hadlock (37) studies. How big a factor is this is in both extending and limiting what can be achieved through group discussion and how can the agent learn to use this aspect of 'social reality' in achieving the learning goal?

There has been little direct study of leadership in

the research reports of study-discussion college graduates would appear to be preferred as leaders by members of groups in the Kaplan (46) study and members who contributed to the discussion frequently, organized and requested evaluation and had a high index of critical evaluation were likely to be chosen by other members of the group as future leaders in the Brilhart (19) study. Hence it might be interesting to investigate whether college graduates demonstrate these qualities to a higher degree than other participants.

Davis' (27) finding that the leader's acceptance and use of discussion techniques taught by the Great Books Foundation did not affect drop-out; but that his acceptance and use of specific techniques which the members desired to see used did affect drop-out. This would seem to offer some verification for Liveright's (54) hypothesis that leadership techniques in Great Books programs should become increasingly flexible to fit in with the desires of members for increasing group cohesion as the years progress.

Wilseys' (89) discovery that groups in which three or more persons had received leadership and participant training carried on more effective discussion than groups not so trained, indicates that there need be no stereotypes concerning the number of trained leaders in group discussion when each leader has a different task to perform in the discussion.

Kaplan's (46) findings that there was varied

satisfaction on the part both of participants and leaders with the materials used in the programs he studies indicates that perhaps the kind of content (controversial since World Politics materials were preferred by a large margin) and the way in which the materials are prepared has considerable effect on the success of the technique. Hill (41) found that identical devices were used as the content basis of discussion in the discussion groups and only as aids to the lecturer in the class situation. Therefore it would seem that research is needed as to the kinds of materials and the type of preparation which would give the best basis for the discussion groups and contribute to the educational goals of the agent in leading the discussion.

The authors of the research reported here are remarkably silent on the subject of the actual physical set-up of their discussion groups, however, group discussions are usually set up in a circular fashion so that every person can see every other. Many of these programs take place in the living rooms of members which lends a casual, informal air to the learning. Comfortable seating, ample space and proper heating are about the only physical requirements. The leader usually sits as a member of the group and requires no special position, though if devices are to be used he should check to see that electrical equipment is working and properly set up before the time of meeting.

Results. The evidence would seem to indicate that where the acquisition of information is the goal, group discussion and lecture techniques are equally successful in a voluntary situation. However, Hill's (41) finding that professionals gained more under lecture technique may be relevant to the Palmer and Verner (66) finding that the lecture group gained significantly more information since the population of this study was highly educated if not professional. Hill's (41) suspicion that in group discussion attendance is related to previous knowledge of the subject by participants coupled with Davis' (27) finding that there was a statistically significant tendency for those with low scores on the liberal arts quiz to drop out of the program suggest that other techniques may be superior to group discussion for those with little initial information. This would seem to be borne out by the preference of those with lower education for strong leadership and subject matter specialists. The stated preference of participants in all studies where the question was asked for a combination of lecture and group discussion would seem to indicate a desire for new information to be put across in the most efficient way plus an opportunity to integrate the material. In the case of study-discussion programs it might indicate that participants wish a face-to-face contact with the agent for the informational areas of the program rather than a confrontation with devices which

cannot answer subject-matter questions. It is important to note that all these studies testing information acquisition were concerned with immediate recall only. Perhaps future testing of the results achieved through use of the two techniques should be concerned with long-term recall. If the goal of the agent in using the group discussion technique is to develop mental skills in the learners, according to the findings of Hadlock (37) and Brilhart (19), he can expect some degree of success. Those who participated in the Hadlock (37) experiment increased their critical thinking scores significantly over the control group and those at the highest education level increased their scores significantly more than those at the lowest level. Brilhart (19) found that participants who attended seven out of ten meetings and who talked enough to have a minimum score on the index of critical evaluation, increased their index of critical evaluation significantly. Since wide differences in changed index of critical evaluation appeared among members of different groups it seems that the fact of group discussion alone does not produce this change. Factors such as group composition may influence the process and so affect the resultant learning. It would appear that there is room for a great deal more experimentation into how mental abilities can be developed through the use of group discussion.

It would appear also that there is a great deal of

room for further experiment in the area of group discussion technique where attitude change is the goal. It is important to discover not only if attitudes can be changed through general discussion in the area of the liberal arts but what kind of attitudes will change and to what degree. Hill's (41) finding that members of both lecture and discussion groups were slightly though non-significantly less ethnocentric, more tolerant of ambiguity and more convinced of the efficacy of democratic procedures than they had been previously, would suggest that group discussion may not be more effective than lecture in achieving broad attitude changes. In that lecture participants with more rigid views did not drop out of the program as they tended to in discussion groups, it appears that lecture is perhaps more effective for this goal. On the other hand the finding that attitude homogeneity decreased in some discussion groups over the course of the program may indicate that many lay leaders were not sufficiently aware of the social pressures to which discussants were subjected in group discussion and therefore did not strive hard enough to create an atmosphere in which views widely diverging from the norm were acceptable. It might be interesting to test how participants in discussion groups can become more tolerant of diversity and also to test whether the changed attitudes of lecture and discussion participants bear up to problem situations in real life equally well.

Since findings from Hill (41) and Davis (27) suggest that those with initially low knowledge of subject matter tend to drop out of the program it would be interesting to discover through a further study whether lack of information and more authoritarian attitudes exist together and further, where the acquisition of more information itself effected attitude change in content areas on the liberal arts. The fact that both group discussion and lecture participants changed though non-significantly to more liberal attitudes would suggest that this is so. It is also possible that the trend towards more liberal attitudes in the lecture groups was accounted for by the change in those who began as least liberal in which case the situation in which such persons are allowed to move at their own pace without any social pressures other than those they choose themselves outside the group might be the best way to provide for attitude growth of such person.

FIGURE 9

GROUP DISCUSSION TECHNIQUES CENTRED AROUND OUTSIDE INFORMATION PLACED ACCORDING TO THE QUALITIES OF THE LEARNING EXPERIENCE

	1. Abstract	2. Semi-Abstract	3. Somewhat Removed	4. Relating to Direct Exp.	5. Real Life Content
1.					
2.					
3. Limited part necessary for all or most students					
4. Opportunities for extensive and sustained participation	Great Books Davis Liveright Carlson Palmer & Verner	Hill Kaplan Brilhart Hadlock		Wilsey	
5. Full participation					

VIB. THE CASE DISCUSSION TECHNIQUE

Research Design of the Study

There is only one study which deals with case discussion and it is concerned with the relative effectiveness of the case discussion and lecture techniques for changing attitudes among volunteer leaders towards the core objectives of adult education. Further objectives of the experiment are to test whether experienced leaders, presumably more committed to adult education objectives initially retain this advantage after training of both themselves and inexperienced leaders, and to test hypothesis suggested by Liveright's (54) work that leaders who volunteer for informal type programs will respond better to training under an informal technique whereas, conversely, leaders who choose to lead in a more formal program type will respond better to training under more formal techniques.

The case discussion technique is described by Soffen (71) as two levels of group discussion. The first stage consists in eight or nine persons seated around a table who are given a problem drawn from the field and are asked to discuss different issues with respect to the problem and, if possible arrive at consensus concerning the solution. The second level of discussion occurs when after fifteen or twenty minutes the group is asked to report on the course of

discussion to the total group and state the conclusion, if any, which was reached. This is followed by general discussion of the report controlled by the agent for time and traffic in order to direct the thinking of the group towards the principles implicit in the discussion and to facilitate integration of the principles involved into participants' thinking.

The lecture technique is described in Chapter Three under the section on Lecture Technique Used As A Standard. The experimenter indicates that two lectures carefully prepared and well presented were given.

The two trainers used for each technique were selected as preferred from a list of those who excelled at each technique: the experimenter had meetings with the trainers to make sure that they would cover the same material. However it appears that the principles were explicitly stated through the lecture but in the case discussion an attempt was made to elicit the principles from the group through problem-solving discussion. Each technique was tested at two meetings held a week apart.

The sample was drawn from practising adult leaders who volunteered for training but who had limited time for training. It represented paid and unpaid, part-time leaders whose main profession was not adult education and who had not had professional courses in adult education. They were drawn

from three types of co-operating agencies: public and vocational schools; university evening programs for adults and informal programs such as those of the volunteer social agencies.

These leaders were attracted to the training program through identical form letters, sent out by their sponsoring agency. Two hundred and forty-two responded from 402 letters sent, but eighty-eight of these were unable to attend. The control group was selected from them. A second letter informed would-be participants of time, place and trainers. Eighty-two registered for the program held on two consecutive Mondays and seventy-two for that on two consecutive Wednesdays. Of these, eighteen filled all the testing requirements for the lecture group, twenty-nine for the case-study group and twenty-two for the control group. The population was assigned to groups by chance modified by ability to attend two consecutive Monday or Wednesday nights. The groups were matched, as far as possible, to include proportional representation of 1) men and women, 2) the three program types and 3) leaders with no experience and those with one or more years of experience.

An instrument was developed to test attitude toward core objectives of adult education as measured by professional thinking. Eighteen professionals participated in the pretest of this instrument and twenty-four in the finished

standard. The answers were found to cluster around a median with a fair degree of homogeneity. When this instrument was administered, at the first meeting for each of the two groups, oral instructions were given to the effect that there were no "correct" answers to these questions but rather that the questionnaire sought a reflection of the attitudes of those present. A reaction sheet was filled in by participants at the end of the second meeting and they were told that they would be asked to respond to another instrument in four months. An explanatory letter was sent to possible persons for the control group after which appointments were made by phone for each person to fill in a twenty minute questionnaire. These participants were also retested in four months time.

The data were analysed statistically.

Findings

Attitude. Soffen (71) notes that the findings of the study may be generalized to the kind of part-time leaders who make themselves available for in-service training.

New leaders improved significantly towards professional attitudes in adult education as a result of participating in two lecture sessions. There was no significant improvement among those who attended the case discussion session

regardless of program type or experience level, nor was there any improvement in the control group.

The author considers that these results which favour the lecture technique in promoting identification with adult education goals suggest that attitude change in this case implies a body of factual material as a preliminary to problem-solving, and an immediate direct attempt at problem-solving through the case discussion technique only results in confusion. He also points out that the kind of freedom of expression needed for good case discussion is perhaps not likely to occur among persons who although working in the same agency may not know each other well. The learner, according to the experimenter, may well be expending his energy on protecting himself whereas in the lecture group he isn't exposed in the same way. Also, in the opinion of the present writer, the lecture participant may well be more open to learning in a field in which he is already interested and in which he has a basis for integrating new ideas. The experimenter suggests further that the size of the group may have been a factor in the case discussion session since there were forty-eight persons at the first meeting, although only thirty-three at the second. This may have meant there were too many persons in the plenary sessions.

With regard to his third hypothesis concerning program type and learning from lecture or case study technique

FIGURE 10

CASE DISCUSSION TECHNIQUE PLACED ACCORDING TO THE QUALITIES OF THE LEARNING SITUATION

	1	2	3	4	5
	2				
	3				Soffen lecture
	4				Soffen case discussion
	5				

it is interesting to note the finding that although all nine new leaders from vocational and university programs improved under the lecture technique only five of nine from informal programs improved. Even though no leaders improved significantly as a result of case discussion it perhaps indicates along Liveright's (54) lines that leaders attracted to different program types learn in different ways and suggests that further experimentation in this direction might produce interesting results.

VIC. THE PERMISSIVE GROUP DISCUSSION TECHNIQUE

Organization of the Section

As was stated in the Introduction on Group Discussion Technique, permissive group discussion is concerned with attitude change or adoption as the goal. The experimenters in this area seem to be extremely uncertain of the technique both of the goals which can be achieved by use of it and of the processes which are used within it to achieve these goals. The studies presented here are organized according to the chief interest of the experimenter. The McGuiness and Willard (61) study is concerned with process and the Perkins (67) study with process and information. Liveright (54) is concerned with process and attitude change or adoption. Andrew (3,4) is concerned with information and comprehension and McGuiness, Lana and Smith (60), McGuiness (59),

Shapiro (68), and McKinely (62), with attitudes whereas the main interest of the Gordon (35), Harvey and Simmons (39), and Keneally (49) experiments is adoption of practices.

Research Designs of the Experiments

McGuiness and Willard (61) state that the purpose of their experiment is to discover distinguishing biographical characteristics of individuals who voluntarily enter into group discussion in a permissive setting. They developed a questionnaire which sought information on the age, sex, marital status and number of children of participants, on their socio-economic status, on their familiarity with the discussion area, and on their group affiliation. A series of experiments was conducted using a film followed by one half hour of group discussion. The group discussion technique is described as led by a professor of psychology who used non-directive leadership. In another place the leadership type is described as permissive and not directive.

The sample consisted of four Parent-Teacher Association groups and three Child Study groups located in the suburbs of Washington, D.C. The sample was found to be 80 per cent women, 96 per cent persons who were married and living with their spouse; 98 per cent of whom had one or more children, and 60 per cent of whom were thirty to thirty-nine years of age. The data was collected through

questionnaires and through a tape recording of the discussion. The material was coded and transferred to key sort cards which were sorted into participant and non-participant categories. The criterion of participation was whether or not a person had voluntarily entered the discussion. Fifteen selected personal history variables were then tested for significance in discerning the difference between participants and non-participants, and participants were tested for personal history on the fifteen variables in relationship to whether they were members of small or large groups. This group was also examined for similarity of history when put into categories according to whether they had seen the film Angry Boy or some other film. The Chi Square Test with .05 significance was accepted as a basis for rejecting the null hypothesis in all tests. Non-parametric analysis was used to test whether there was any inter-correlation among the biographical variables. The eight variables which were found to be reliable predictors of participation were examined for independence by Chi Square in all possible combinations.

Perkins (67) in an experiment, the purpose of which was to discover to what extent the climate of a group influences the learning which takes place, has examined group-oriented discussion where most of the leaders' statements would fall into the categories of reassuring, clarifying,

and problem-solving remarks, and teacher-centered discussion where most teacher's remarks would fall into the directing, reproving or defending categories with the general emphasis on leader behaviour. The sample was six teacher groups who were involved in an in-service training program of self-study. Three of the groups used in the experiment were found to be learner-centered and three were teacher-centered. Observers used the Whitehall technique for assessing classroom climate. This instrument enables the observer to record whether the leaders' remarks fall into permissive or directing categories. The groups were designated as group-centered or teacher-centered according to the categories into which the greater proportion of remarks fall. Members' remarks in group meetings were also categorized according to whether they revealed knowledge of concepts of child development, the kinds of attitudes towards children which were evinced and the degree to which statements revealed knowledge of fact and principle. These data were then correlated with the data on type of technique to see which type facilitated greatest expression of child development knowledge.

Liveright (54) in a study concerned with process and goal identified two extreme leadership styles, the group-oriented and the content-oriented. The group-oriented approach to leadership would appear to be the permissive-group discussion approach.

The Andrew (3,4) experiments are included here because, although various kinds of group discussion are tested the main interest and, to anticipate, the main findings are connected to the permissive approach to group discussion.

Andrew (4) was interested to study participants' gain in information as a result of participation in a workshop, and their ability to generalize this information. The workshop was held to attract parents, teachers and public health nurses to learn about the concept of permissiveness in handling children and to discover the necessity of learning how to direct aggressive behaviour into constructive channels. A variety of information types were tested within the first two studies as well as several discussion techniques, of which permissive group discussion or the 'group-oriented' approach was one. Within this technique the agent and resource person tried to cover the topics in the manual but considered this secondary to accepting the feeling of group members and offering interpretations and clarifications of their discussion. There was no effort to force the group to discuss certain areas of the topic. In the first alternative to the 'group-oriented' approach a resource person presented himself as an expert on the subject and attempted to direct the group discussion to cover the material dealt with in the information-giving sessions. This leader tried not to be an authoritarian or too aggressive but acted as an

expert. A second technique was question and answer period. Here the resource person stated he was an expert who could answer questions. He made no attempt to direct the discussion but answered all questions he was asked by members of the group. A third group was given no leader and no guidance of any sort in carrying on their discussion. A control group of college students was also used for this experiment. These students had a variety of backgrounds but had not studied the subject matter of the workshop. They were tested and retested in two days. There were two groups for each technique tested. The workshop was set up so that each information-giving technique was followed by one of the types of group discussion used in the experiment. The group discussion population was divided into eight sub-groups of from seven to ten people composed so as to include parents-teachers and nurses in each group.

The data was collected by a questionnaire which had been developed and tested through a pilot study to discover its relevance. A total of thirty questions tested the factual knowledge of participants on the subject of the information-giving lectures and the ability of participants to generalize this information. The questionnaire was administered twice, at the beginning and at the end of the workshop. The data were analysed according to an effectiveness index developed by Hovland (43,44) which allows the

researcher to see the percentage of change which occurs as a function of the total possible change and thus avoids the problem of varying initial levels of information among the participants.

In the second experiment based on this workshop Andrew (3) sought to observe the self-oriented needs given voice by the participants and the relationship of these needs to achievement and assimilation of the information. The data were collected by a team of eight psychologists and psychiatric social workers using an observation form shown through pretest to have an unusually high degree of reliability (Chi squared = 72.5). Self-oriented needs were categorized as aggressive, cathartic, status-seeking, dominance-seeking, and dependency.

McGuiness, Lana and Smith (60) tested the use of the Canadian National Film Board Films: The Feeling of Rejection, The Feeling of Hostility, and Breakdown, alone and as used with permissive group discussion following the showing to see which created greater opinion-change. The group discussion is described simply as permissive discussion led by a professor of psychology. The sample consisted of six small groups formed from Parent-Teacher Associations and Child Study Groups in Prince George's County, Maryland. Four of these groups totalling eleven to eighteen members each, were shown a series of mental health films and two additional groups of nine

members each, were used as controls. The total study population was seventy-six persons. The sample had a mean age of 38.8 years, averaged 2.8 years of college, and had a mean income of $7800 per annum. Sixty-three per cent of the sample were housewives. On a mental health rating scale the sample assigned themselves a position halfway on the scale.

A mental health opinion inventory was developed for use in the study and was found to reliably measure belief and opinions concerning mental illness. The inventory was administered both before seeing the series of three films and after seeing the films. After the first test it was found that the sample tended somewhat towards professional judgements with regard to the scale items. Two of the treatment groups viewed the films at bi-weekly intervals and each film presentation was followed by one half hour of discussion. Two other treatment groups followed the same procedure without group discussion and the control groups merely answered the questionnaire twice at four-week intervals. The data were analyzed by three analysis of co-variance t-tests to determine specific sources of between treatment variation.

A follow-up experiment reported in the same write-up (60) was undertaken to determine whether one of the three films shown was responsible for most of the opinion change, and to determine whether film alone or film plus discussion was more effective with only one session. In this

experiment each of the three films used in experiment one was shown to a different group after which the members engaged in permissive group discussion under the same professor of psychology as was used in experiment one. Three other groups viewed one of the films each and were post-tested immediately on the questionnaire without discussion. The sample consisted of sixty-four persons recruited from the same type of Parent-Teacher Association and Child Study Groups as in experiment one. They were placed in six groups. The sample was found to have a mean age of 38.3 years, an average education of 2.5 years college, a mean family income of $7,280 per annum and 76 per cent of the sample were found to be housewives. On the nine-point rating scale on mental health concepts the mean rating was found to be 4.1.

The data were collected through the same opinion inventory as in the previous experiment which was first administered one month before the film discussion session. The questionnaire was administered a second time following these meetings. The data were again analyzed through analysis of co-variance on the opinion change scores.

McGuiness (59) has published a summary of the results of a four-year program to discover the effects of mental health films used in conjunction with community discussion groups. The findings of this summary are useful for the

present review. The author states that his sample could be described on the average as women from thirty to fifty who have one to four children and a family income of $6,000.a year. There were male members in some of the groups and the educational range of participants was from grade school completion to some college training.

The data were collected through observation of group discussion and through questionnaires administered after the film. Content categories were developed for observation of the discussion groups which included the film, mental health programs and concepts in general, personal experiences of the participants with mental health problems and concepts, and a classification for other comments. The coding unit was any sentence structure actual or implied. The inter-coder reliability for this form was found to be .90 or better.

Shapiro (68) was interested to discover whether child rearing attitudes could be changed by group discussion over a period of time. Although there is no indication that the discussion was permissively structured it is included in this section because most parent group discussion with the intent of changing attitudes has been permissive.

The sample consisted of twenty-five parents who were matched individually with the twenty-five member control group according to occupation, education, religion, age and sex. The two groups were comparable on a group basis in

terms of a mean score on the initial test, number of children in each family, age distribution of children, annual family income and nativity. The data were collected through questionnaires mailed to participants at the beginning and end of the ten-month experiment, which were returned anonymously. The questionnaire was designed to measure parental attitudes towards child rearing in terms of authoritorianism, possessiveness, rigidity-fussiness, permissiveness, parent-child integration, and good judgement. Pre and post ratings were also given by a psychiatric social worker and a public health nurse who visited all the parents in their homes and rated them on a six-point scale for each of the attitude dimensions covered in the questionnaire. The data were analyzed statistically in terms of tests of significance.

McKinley (62) in an experiment with patients in a mental hospital, sought to discover whether the following needs could be met through participant training: the need for increased feelings of self-worthiness; the need for increased willingness and ability to accept and help others; and the need for increased willingness and ability to communicate verbally and non-verbally with others. He describes the group discussion technique as used in his experiment thus: the agent encouraged freedom of expression; he sought active participation initiated by group members; he encouraged members to help develop the program and to accept training

in becoming a discussion team. The sample was twenty-two male participants aged sixty to eighty-two.

The sample was divided into two groups. Group O had diagnosed organic illnesses with mental aberrations and consisted of ten members. Group F had diagnosed functional mental illnesses and consisted of twelve members. The data were collected through a rating instrument which had a reliability coefficient of .976. It consisted of twenty-eight criteria each with a nine-point rating scale. Each participant was rated by five raters both before and after the program. Mean ratings were computed for each group and the t-test of paired differences was applied. These differences were tested for significance at the 5 per cent level of confidence. The technique was used within twenty one hour sessions.

The Gordon (35) experiment is reported here because a by-product of its purpose was to study the meaning of participation in a "self-directed" group discussion. Participants were responsible for the content of the discussion, for making up their own agenda, for seeing that conclusions were reached and for planning the mode of presentations to others. The sample consisted of sixteen persons who participated in a group dynamics laboratory at Bethel, Main in 1949. The data were collected by recording a client-centered interview where the interviewer did not comment on the content but

reflected all questions back to the interviewee. The data were analyzed by playing back recordings made of the interviews and pulling out self-reference statements.

Harvey and Simmons (39) wanted to examine the relative effectiveness of 'group' and 'teacher' centered approaches with regard to weight reduction. They describe the 'group' centered approach only as "psychologically" centered groups led by social workers. The sample consisted of eight groups of women of about fourteen members. Each group was exposed to one of the two approaches. The groups had been selected so that women above forty and women below forty were in homogeneous groups. The data were collected and analyzed through the amount of weight lost.

Keneally (49) was also interested in the use of the group process to achieve weight loss. He also designated the technique by the type of leadership. Some group discussions were "group-oriented" rather than "teacher-oriented" indicating that the former discussion was more in line with content the group wanted to discuss.

His sample consisted of five groups of women and one group of men. The average group had eleven persons. Members were assigned to groups by total body weight rather than build or amount of over-weight. There were two groups of women who averaged 141 pounds, one group which averaged 197 pounds, one group which averaged 165 pounds and one group

which averaged 143 pounds. The two groups in the same weight range were divided according to educational homogeneity. Data were collected which showed the number of meetings attended by each participant, and the weight loss which resulted. Six months after the program was over a questionnaire was sent out to all participants which asked only the present weight of participants. There was 80 per cent response to this questionnaire. Since the sample was small no statistical significance was attributed to the findings.

Findings

Processes. McGuiness (61) found that biographical factors can be used to predict participation in group discussion. While rental or home ownership was not related to participation better education and higher income levels were so related. Participants who reported having seen a greater number of mental health films in their clubs and participants who gave themselves a higher rating on the subject matter of mental health were more likely to enter the discussion. Four of the five factors under the category of group affiliation were found to be related to discussion participation. These were that: persons who were currently or had been officers in this or other groups were more likely to participate; members who had been present at a greater number of previous meetings

were more likely to participate; the more personal acquaintance the member had with other group members the more likely he was to participate; and persons who were members of several community groups were more likely to participate than those with few or no such affiliations. Seven of these eight predictors were found to be reliable at better than the .01 level of significance for members of small groups only. It was found that members of large groups were lower in socio-economic status, had not seen as many mental health films previously and were less likely to be acquainted with other members than participants in small groups.

McGuiness (61) found that in general, education and leadership could be used as predictors of participation in the discussion when education was defined as grade attainment in school and leadership as elected officer status in groups. Position as a club leader was grouped with the number of meetings attended by the participant, the number of persons known in the group and the number of other groups with which she was affiliated.

Perkins (67) found that group-centered groups were well ahead of leader-centered groups in backing up statements with substantiating evidence and in sounder logical and reasoning processes. He also found that members of group-centered groups showed more warmth and acceptance in their discussion of children whereas members of leader-centered groups were more conventional and cold in their attitudes

towards children. Group climate as measured by a technique for categorizing statements made by leaders remained relatively staple throughout each discussion. He found that greater learning occurs where the group is able to focus on the objective problem more clearly and that this occurred in group-centered groups. Leader-centered groups tended to spend more time on techniques for recording and analyzing information about children. Participants in leader-centered groups were found to make statements which showed they were more self-involved and had greater feelings of inadequacy and uncertainty than members of group-centered groups. The author found that in group-centered groups tension was relieved through laughter, whereas the leader-centered groups revealed tension in group and speaker statements.

Perkins (67) has given us very little information about his sample in this experiment other than that it is composed of teachers. Also he has said little about his data analysis and the test of significance which he uses and his means of correlating the findings to relate variables to one another. However the idea of examining process in connection with learning and climate is a very fruitful one and an area in which there is room for a great deal more experimentation.

Liveright (54) in his study of the group-oriented leadership style described discussion focused by this type of

leadership as educational in that it is concerned with all problems of personal and economic life and may be complex in terms of the variety and kind of problems discussed. Information is supplied as needed but the emphasis is on solving problems brought up by the group which is usually homogeneous and cohesive.

Comments made by resource persons in the Andrew (3) experiment may throw light on areas that could take further testing in the permissive group discussion process. These were that leaders of all Andrews groups were practising therapists who showed anxiety in leading all but group-oriented discussion. It was found that in these permissively oriented discussions the content did not come from general session material in any detail but only touched upon it at times as the group considered a variety of concerns in relation to children. The topics covered in the actual discussion were found not to be related to the test results of participants.

Andrew (3) had the observers in her experiment grade each participant on a ten-point scale according to the degree to which his remarks evidenced self-oriented needs. The observer further indicated the need most predominant for each individual. She found that the higher the individual rated on self-oriented needs the lower his score on the post-workshop test. This finding was reliable at the .70 level

by the Pearson R. test. She also discovered that there was a negative relationship between the expression of self-oriented needs and the degree of improvement on the post over pre workshop test results, however those who expressed a great number of self-oriented needs did better on the pre workshop tests than those who did not indicating that these participants were initially better informed but were not able to learn as much in the course of the workshop. On the basis of these findings the author hypothesized that the satisfaction of self-oriented needs within the group would result in greater learning. She analyzed the relationship between the different kinds of group leadership and the predominant kinds of self-oriented needs which were expressed within the groups. She found that the leaderless groups gave the greatest opportunity for participants to express self-oriented needs and that once the group was organized there was little expression of aggressive or dominant needs or need for status but catharsis was most expressed and most acceptable to other group members. She found no relationship between the predominant needs expressed and type of leadership in other groups. She found however that aggressive status, dominance and dependency needs were expressed more frequently in these other groups.

The experimenter concludes from this experiment that the best type of workshop is one in which information-giving techniques are followed by leaderless group discussion

which allows for free discussion of the problems about which the participants are most concerned.

The fact that McGuiness, Lana and Smith (60) discovered that when a film presents mental health concepts through a series of unrelated episodes audience discussion after the film centers around the problems presented rather than the characters suggests that further experimentation into the process of information-giving devices would prove fruitful.

McGuiness (59) has some findings on the group discussion process in his summary of a four-year research program into mental health films and community discussion groups. He found that total verbage increases rapidly during the first half hour period of discussion and then the number of contributors falls off as those who are talking speak more words per minute. Most of the persons who participate in the discussion fall into the 100 to 600 word range. The verbal output of most groups was found to be a J-shaped function and not the normal curve.

He has defined spontaneous discussion as that which is entered into without prompting by the leader in response to remarks made by other members of the group. He found that spontaneity was low at the beginning of the discussion but increased in a linear fashion throughout the discussion period and that this finding was similar for large and small

groups but that spontaneity was much greater in small groups.

He found that greater discussion spontaneity existed in groups where individuals had either strong, positive or negative attitudes towards the film than in groups where the members' feelings were neutral or indifferent to the subject. He found that persons enter into the discussion more quickly in small groups and that they also enter in more quickly where different persons have well defined attitudes towards the film than where neutrality or indifference exists.

He also discovered that there was a relationship between the discussion content and the content of the film. Discussion centered around the film itself when a central theme with several main characters were used. But where mental health concepts were presented through a series of unrelated incidents participants' attention was focused on the real problems and principles illustrated in the film.

When the film portrayed normal parent-child problems participants readily discussed their own experience but they were much more reluctant to discuss personal problems that related to films on mental illness.

McKinely (62) found that the participants in the two discussion groups he tested showed positive gains in the areas of freedom of expression, active voluntary participation, willingness to share in program development, and gaining

training in the responsibility of discussion teamwork.

Keneally (49) in his non-statistical pilot study, observes that teacher-oriented meetings had more structure than group, or in our terms permissively, oriented meetings. He observed further that although the two types of meetings were planned, organized and conducted independently of each other the same subject matter was covered in all groups.

Information. In the McGuiness and Willard (61) experiment several of the predicting biographical factors were found to be significantly related to others in terms of Chi Square with appropriate degrees of freedom. One such set was that educational background was related to high income, to self rating of knowledge about mental health concepts and to membership in various groups. Self rating of information on mental health was related to the number of mental health films seen. Andrews (4) uncovered no significant difference between the mean scores of experimental and control groups on the initial test of information. However on the second testing after the workshop a different significant to the 0.1 level was found to exist between experimental and control groups. Nine of the thirty items however showed a change away from the expected correct answer, and six of these items were on the general topic of permissiveness. Andrews (4) found the greatest improvement was in the area of how to handle child's aggressiveness and in identification,

the concept of the child internalizing the parent image. On the section of the test dealing with ability to generalize the factual information given in the workshop to other situations there was improvement in nine out of ten items. The one failure was in the area of permissiveness which was consistent with the findings on purely factual information.

Although she discovered that all variations of group discussion technique were effective in creating some improvement the leaderless group discussion was the only one in which improvement was statistically significant. In breaking down these findings she discovered that the leaderless group had gained significantly more information but that no group was significantly better than the others in ability to generalize the information. Andrews (4) considers this may be due to confusion concerning the applicability of the information, a necessary step in learning. This would indicate a short term workshop with four discussion sessions does not provide adequate time for this type of information to be integrated.

She therefore concludes that where the desired outcome of group discussion following an information-giving technique is the acquisition of information alone, leaderless groups discussion will prove most effective. She thinks that the results with other groups might be interpreted to show that the members of these groups were confused as to the

application of this information and that this confusion may be a step in changing the attitudes. It seems that the type of discussion which will create significant attitude change might, on further experimentation, be found to be different than that which creates information acquisition.

Andrews (3) also found that individuals expressing most self-oriented needs learned less than those expressing fewer self-oriented needs. The greatest expression of self-oriented needs occurred in the leaderless group discussion and these were largely cathartic in nature. Such expression may have some relation to the group ability to acquire information since the leaderless groups in this experiment were significantly superior to all others in information gained. If information gained can be considered equivalent to expression of child-development concepts these findings would appear to be opposite from those of the Perkins' (67) experiment since observers found little expression of 'self-oriented' needs in 'group-oriented' groups, yet there was greater expression of child development concepts in the groups. Andrews (3) states that the leaderless group gave participants little opportunity to express aggressive or dominant needs, or the need for status. There was greater expression of these other needs, though not significantly so, in leader-led discussion groups. However there was no relationship between such expression and the ability to

generalize.

Perkins (67) found that more learning measured in terms of child developments concepts expressed, occurred in group-centered climates, or in our terms permissively led groups than in leader-centered climates. This was so in terms of statements made by the total group, statements by group members not including leaders, and when statements by leaders only were considered. These differences were significant although the author does not mention what test he used for significance in this study. His definition of learning also seems open to question since it seems possible that members of group-centered groups could have known more about child development concepts to begin with than did their opposites in the leader-centered groups.

In summary it might be said that there has been little examination of permissive group discussion in terms of reaching the goal of information acquisition. It may be that this is not a goal which can be efficiently achieved through the use of this technique.

Attitude. Shapiro (68) found that his findings, in the large, substantiated his hypothesis that exposure to group discussion would modify parental attitudes towards child rearing in the pre-determined direction. His hypothesis that favourable change in child rearing attitudes would be positively related to the amount of exposure was also

substantiated. The change which resulted from exposure was considerably greater than that required to establish statistical significance. He found that those who attended four or more meetings in the series changed their attitudes to a significantly greater degree than those who attended three or fewer meetings. The change in child rearing attitudes among the experimental group was fairly evenly distributed among the parents who changed. Those who had beginning scores which gave evidence of attitudes nearer the professional improved a great deal more than those whose beginning attitudes were away from the professional. Those scoring low on the initial questionnaire were also those who attended three or fewer meetings in the main.

Shapiro (68) found that qualitative statements from spoken and written material of group members agreed with the statistical findings derived from the questionnaire.

McGuiness, Lana and Smith (60) found that film alone and film discussion groups were equally effective in promoting opinion change among the participants. Both experimental groups improved to a significantly greater extent than the control group. The researchers found further that the opinions of discussion group members were no closer together either before or after the treatment than were those of the film alone group.

In the second experiment within this context

McGuiness, Lana and Smith (60) found that with only one film shown or one film plus discussion five of the six experimental groups changed their opinions in the desirable direction although only one of these groups changed to a degree significantly greater than zero. An insignificant F-test for between group treatments showed that film alone was as effective in creating this change as was film plus discussion.

These unexpected results led the authors to hypothesize that perhaps the films alone had induced as much change as was possible in this already professionally oriented population. They note that for film alone groups, there was obvious discontent at being dismissed without any opportunity to discuss the film.

McKinley's (62) results on process show that changed performance apparently dependent on attitude change can also occur among patients in a mental hospital as a result of permissive group discussion over a period of time. At the very least these findings would indicate that there is considerable merit in further research into how attitudes may be changed through the use of permissive group discussion. The hypotheses of this experiment were stated in positive form and had to be rejected because the gains were not 100 per cent positive, however the results were good and would have been significant had the hypotheses been stated in the null form. He concludes that such participation training in the group

discussion technique could be a possible adult education technique to help restore certain hospital mental patients.

Gordon (35) found that a total of fifty statements could be located under the changes in self category. These statements indicated that as a result of the group dynamic content the individual felt more acceptance by others and more accepting of others, and had more ability to accept his own personal limitations. In terms of group membership these statements revealed greater acceptance of the responsibilities of group membership and more recognized desire for membership in groups. Under category two entitled "New or Reinforced Understanding of Self" he found thirty-four persons made fifty-nine statements which showed that they had become more aware of autocracy and dependency in the group and that they were more aware of their own feelings and of their false behaviour and tendency to avoid responsibility.

He concludes that the data show that learning is largely a reorganization process and that in order to accept one new idea considerable shifting and re-ordering of previously held concepts is necessary.

Adoption. Neither Harvey and Simmons (39) or Keneally (49) saw any significant difference in weight loss of participants according to the type of technique used in their group. Harvey and Simmons (39) found that after

sixteen meetings ninety-three out of 109 participants who had come to four or more meetings remained in the course. Seventy-seven of these persons lost ten or more pounds and of these, forty-six lost twenty or more pounds. Only one person did not lose at all. Eleven persons lost five or more pounds.

Keneally (49) found that the greatest mean weight loss occurred among those who had attended eight to eleven meetings. These persons turned out to be the slow starters and had lost an average of fourteen pounds each by the end of the program. He discovered that 50 per cent of successful participants and 80 per cent of unsuccessful participants preferred the lecture type of technique. He suggests this may indicate a dependence on authority which might be a characteristic of obese persons. Keneally (49) states that this study was intended to be a pilot study on weight reduction.

Summary Discussion of the Permissive Group Discussion Technique

Description. The technique here described is the Permissive Group Discussion or the Group-Oriented Group Discussion technique. The technique will be called Permissive Group Discussion in this review. In general permissive group discussion can be described as group deliberation centered around problems brought up by the

group where the agent has no predetermined idea of the content that should be covered. There seem to be two interpretations of the agent's role in the experiments here reported indicating different ideas of how active the agent should be in intervening in the group discussion process. According to one interpretation the agent plays a purely passive role in the discussion process and merely reflects back questions directed to him by participants, perhaps clarifies occasionally but seemingly does little to affect the course of the discussion or the content covered. According to a second interpretation the agent actively encourages group participation in terms of the expression of feeling or the bringing forward of problems. He also questions and comments during the course of the discussion so that the discussants are made aware of the total problem. The content which participants introduce is given form and covered logically. Further research will be required to determine whether these two approaches to the agent's role are effective in achieving different or similar learning goals or if a combination is most effective.

Regarding the discussion process Perkins (67) discovered that where leaders' statements could be designated as reassuring, clarifying and problem-solving more child development concepts and more substantiating evidence for views stated were expressed. Also logical reasoning was

forthcoming. Warmer attitudes to children and greater ability to see them as individuals were evinced. He seems to be saying that in a climate where they felt free to express their feelings the teachers were able to get down to business with less tension.

It is interesting to note Andrew's (3) finding that leaderless group discussion gave participants greater opportunity to express self-oriented needs and the result was greater information learning though not greater ability to transfer than for permissively led groups. Presumably the ability to transfer information is a test of whether it has been incorporated into the cognitive structure of the individual. If this is the case none of these processes were effective in achieving this goal. However it may be that a sequence of four permissive group discussion sessions within a two-day workshop are insufficient to achieve such a goal.

McKinley's (62) finding suggest that training in the permissive group discussion process is possible and that over a period of time participants talk more, gain greater freedom of expression and take greater responsibility for program planning.

Gordon's (35) experiment although it was conducted with a small sample on which there were no controls indicates a fruitful line of inquiry into the affects of what appears to be a new type of group discussion. This discussion is

leaderless in the sense that no controls or expectations are placed on the group, which is expected to structure its own discussion, analyze the content material presented and present a summary to the total session. This experiment seems to have been conducted within the Lewinian framework which considers that new knowledge requires a shift in the total cognitive field of the individual. The suggestions that, as a result of this type of group discussion, centered around the individuals own perceptions of his relationships with other people in the group and his reactions to the group, the individual may arrive at greater self-understanding is in accord with group dynamics theory.

McGuiness' (61) findings concerning the biographical predictors of participation in permissive group discussion might well be compared with Davis's (27) findings on the influence of outside social roles on discussion activity. McGuiness' (61) discovery that education in terms of formal schooling and leadership in terms of previous elected offices in groups, are the most reliable predictors of participation in groups should help the agent to prepare for group discussion providing he has biographical material on participants.

It would appear from McGuiness (59) summary of the research that the agent can expect spontaneous comments to begin slowly and increase lineally throughout the discussion,

he can expect a drop off of numbers participating in the discussion after the first half hour as those who talk speak more words per minute. Further, individuals with well-defined but conflicting attitudes towards a film will enter the discussion more quickly and with greater spontaneity than those with neutral views,and discussion is found to be more problem-centered when the film depicts several episodes concerning the problem than when a continuous theme is given. Consequently the composition of the film can effectively create structure in the following discussion.

There has been only one study, Liveright (54), on leadership in permissive group discussion. However it is interesting to note that the leaders in most of the experiments reported here have been psychologists, psychiatrists and social workers. This might imply that although the content in these experiments was free, and the participants could bring up anything they desired, that there was definite structuring of the discussion around this content according to behavioural concepts with the aim of achieving certain kinds of learning. It is interesting to note that Liveright's (54) description of the process of a group-oriented program agrees with this description. The task of the leader is educational in that he must purposively order behaviours into planned systematic experiences which can result in learning but it may be that he requires specialized

knowledge in the behavioural sciences to structure content largely revealing participants' attitudes where change may threaten their total cognitive structure.

In terms of Lewin's (52) theory this may mean that for the "unfreezing" of old learning to occur the participants must be free to express their true feelings about the material hence the term permissive, but the agent must focus the discussion around this material so that the participant examines his attitudes and discovers himself if they can stand in the light of new information. This perhaps shows where all the psychological disciplines are actually concerned with educational goals but the structuring of learning in these areas requires very specialized knowledge in human behaviour and consequently has become the subject of a whole new series of disciplines.

There is a great deal of room for investigation into the process of permissive group discussion. It would help the agent to know how much expression of needs and how much structuring of such expression is needed to achieve learning goals. In order to distinguish the variations in process among the different kinds of group discussion it would seem that a form such as the Bales Interaction Process Analysis form should be used for observation of all types of group discussion in order to provide comparable results.

The experiments undertaken here have used teachers, parents who were members of parent groups such as the

Parent-Teacher Association, nurses and mental patients as subjects. Group size has ranged from five to thirty persons with usual group size in the range of ten to fifteen persons. The same general prerequisites as are necessary for other forms of group discussion seem to be important in terms of physical arrangements. A comfortable room, a seating arrangement such that participants and leaders are facing each other are all that are really necessary.

Results. There has been almost no investigation into the relationship between information learning and permissive group discussion. Andrews (4) has one finding which indicated that greater information learning resulted from leaderless than permissive group discussion when the discussion was based on information presented prior to the discussion via a device and Perkins (67) found more child development concepts were expressed in permissively led than in leader centered discussions.

Shapiro's (68) finding that the amount of exposure to group discussion on child-rearing concepts is significantly related to favourable attitude change, provides the educational agent with the idea that attitude change on basic concepts which threaten the cognitive structure of the individual cannot be achieved on a short-term basis. Moreover Shapiro's (68) finding that low scorers on the initial questionnaire tend to drop out agrees with Davis' (26)

findings on drop-outs in the Great Books series. McGuiness, Lana and Smith (60) hypothesize from their experiment that permissive group discussion does not result in further attitude change than a straight information giving technique when the subjects' attitudes are aligned with those of professionals in the field. These results indicate that further research is needed to establish when permissive group discussion is effective in the area of attitude change and the time sequences necessary for effective use of the technique.

Although both Harvey and Simmons (39) and Keneally (49) found weight loss to result from both directed and permissive group discussion there is room for more experimentation here using proper study designs and with better description of the processes used within each technique.

In general whether the goal is opinion, attitude or behaviour change these results indicate that permissive group discussion is not effective when used on a short-term basis but that desirable changes occur when it is used over a period of time, alone or in conjunction with other observation and information type techniques. This may indicate the need for a time dimension on the Newberry scale.

There has been little experimentation on the long-term effects of permissive group discussion on attitude or behaviour change yet this type of discussion in which

FIGURE 11

PERMISSIVE GROUP DISCUSSION TECHNIQUE PLACED ACCORDING TO THE QUALITIES OF THE LEARNING SITUATION

	1.	2.	3.	4.	5.	
	2.					
	3.					
	4.			Shapiro Andrew McGuiness McGuiness, Lana & Smith McKinley	leaderless discussion Andrew	
	5.				Gordon Harvey & Simmons Keneally	

participants' attitudes and experiences are brought to the fore and which seems to demand that new ideas be well examined and integrated with previous positions, would seem to effect long-term action patterns more strongly than immediate. While integration is going on there is bound to be confusion and would seem to inhibit changed action until the integration is complete. An experimental design such as that used by Bond (16) to test results over a long time span might give a more effective means of judging the value of this technique than the criteria used by experimenters in this section.

VID. THE GROUP DISCUSSION-DECISION TECHNIQUE

Organization of the Section

The group discussion-decision technique is so named because a specific problem is considered in the course of the group discussion session and a decision to act is requested of participants. The goal of learning of most studies in this section is adoption of new practices. The Lewin (53), Bavelas (9), Levine and Butler (51), and Bond (16) studies seek individual action. The Coch and French (24) study seeks group problem-solving and changed action and the Maier (55,56) and Salem (72) studies seek group-problem solving as the goal.

Research Designs of the Studies

The purpose of the three Lewin (53) experiments was to encourage housewives to serve less popular but healthy foods during the second world war. The group discussion-decision technique as used in the three experiments is described by Lewin as follows: The discussion was conducted so as to secure high involvement of the participants and not to impede the freedom of the decision made by the group. There was an attempt to minimize resistance through talking in terms of "housewives like yourselves" rather than in terms of the individual. At the end of the meeting there was a show of hands as to who planned to implement the suggested practices.

The experiment was so designed that a female lecturer gave a lecture using devices to three groups of women and a trained group worker led the other three groups in discussion using a nutrition expert as resource person. The sample consisted of six groups of Red Cross volunteers who were organized for home nursing. Each group had thirteen to seventeen members. The data were collected through asking women whether they had in fact adopted the practices they had decided upon in discussion-decision groups and analysed by taking percentages on these figures.

The second experiment was undertaken by Glenna Klisurich under the direction of Marion Radke (53). The

sample was six groups of housewives with six to nine members in each group. This group of housewives was from the same neighbourhood or visited the Nutrition Information Service of the Community Centre. However, they were not tightly-knit groups such as the Red Cross groups. The data were collected through follow-ups after two weeks and after four weeks, to see if the suggested practices regarding fresh and evaporated milk had been adopted. A third experiment by the same authors (53) was conceived to test the effectiveness of individual instruction versus instruction through group discussion-decision. The sample were farm mothers to whom the Iowa State Hospital gave advice on the feeding of babies. Under the individual treatment each mother met with a nutritionalist for twenty to twenty-five minutes, whereas under the group discussion-decision treatment groups of six mothers met for instruction and in discussion on baby feeding over the same period of time. Once more a two and a four weeks follow-ups were made and results taken on a percentage basis.

Group discussion-decision was used by Bavelas (9) for the purpose of setting goals on production which could be accomplished in a specific length of time. The meetings are described as group-decision meetings held with a psychologist. The sample consisted of a co-ordinating group in a plant using piece methods of pay. Two groups other than the experimental

group were used as control groups and the technique here was group discussion on the same problem with the psychologist but without the attempt to set production goals. The data were collected through personal observation of the results of the technique and analyzed in simple numbers.

Levine and Butler (51) were interested in discovering whether the acquisition of knowledge alone was enough to lead a group of individuals to change socially undesirable behaviour, or if group discussion-decision was more effective. The problem dealt with in this experiment was that supervisors of working men at three different levels tended to rate the performance of the worker according to his level rather than according to performance within his own level. Hence workers at level three automatically received better ratings than workers at level one.

Under the experimental treatment the group discussion-decision leader sat as one of the group and introduced the problem by showing graphs of previous ratings, and then raised questions as to why the higher level of worker consistently got higher ratings. From that point on the leader acted merely as a moderator for one and a half hours of discussion on the problem during which time the supervisors arrived at several conclusions. The group reached a decision to avoid inequalities by rating the man doing the job and not the level of difficulty of the job. The lecture technique was

conducted in the normal way in a room where the people sat facing the lecturer. The lecturer used devices to help him in his analysis of the problem and gave considerable background material. The lecture was followed by a question and answer period and the total session lasted one and a half hours. The sample consisted of twenty-nine supervisors of 395 workers in a large manufacturing plant who were divided into three groups of nine, nine and eleven for the experiment. Group A was the control group and consisted of nine supervisors of 120 workers, Group B was the discussion-decision group and consisted of nine supervisors of 123 workers, Group C was the lecture group and consisted of eleven supervisors of 152 workers. The data for this experiment were collected by taking ratings of these supervisors seven days after the experiment and analyzed by the Chi Square Test for significance.

A major study in this area was conducted by Betty Wells Bond (16) to test one major hypothesis stated in the null form:

> That group discussion-decision methods do not result in a significantly higher level of motivation towards the advocated health practices than would be attained by providing the same information through a mass information method (lectures). (16 p.3)

The health practice advocated in this study was breast self-examination by women. Three criteria of success were established to test the effectiveness of the technique,

namely:

> the obtaining of a breast examination from the woman's physician to determine the normality of her breast tissue, thus providing a baseline for her subsequent practice of breast self-examination, the practice of monthly breast self-examinations; and the demonstration to the physician or his assistant of her technique of breast self-examination. (16 p.3)

The experimenter states that in the groups in which she used the discussion-decision technique, she attempted to identify herself as a member of the group quoting physicians as the source of technical information she brought in from time to time as the questions arose. She attempted to establish a non-threatening group climate and much of the discussion was around why women delay in seeking treatment or diagnosis for cancer rather than around information on treatment. At the close of the discussion-decision meetings which were half an hour in length, the members were asked if they wanted to make a decision by showing hands, nodding their heads, or stating agreement. There was no pressure to make this decision. The lecture was set up as a twenty-minute talk with a ten-minute question period at the end. Under the lecture technique the investigator identified herself as a member of the Duluth Health Department and an authority on the subject. The lecture was seen as an information-giving technique and only information questions were answered during the course of the lecture. The same information was given with both techniques.

The sample consisted of 933 women who participated in seventy-five already existing groups in the middle-class sections of the City of Duluth. These groups consisted of 45 per cent church groups, 18 per cent fraternal groups, 15 per cent educational groups, 12 per cent social groups, and 9 per cent garden club groups. On testing the characteristics of this population the researcher found that the forty-two groups used to test the discussion-decision groups and the thirty-three groups used to test the lecture technique were comparable in the following ways: they were found to be homogeneous with respect to marital status, attachment to persons with cancer, group membership, and reported leadership positions held by different members. Differences in formal schooling were significant between the .05 and the .01 levels of significance with the observed difference slightly favouring members of the discussion-decision groups as to the proportions who had attended college, and also as to members with grade eight or less education. The discussion-decision sample was found to have a higher percentage of people under forty years of age. The techniques under study were used at regular meetings of these groups. The largest group had thirty members and the smallest five, with most groups small or medium in size. The data were collected through a pre-meeting questionnaire given under both treatments and a post-meeting sheet given to

members of the discussion-decision groups only. This latter questionnaire sought to discover the individual's personal intent to follow-up on the decision of the group and her judgment of the personal intent of the rest of the group. Follow-up interviews were conducted by mail questionnaire, group meetings, and telephone interviews. Two such general follow-ups were conducted: the first was during a time interval of three to seven months from the original meeting; and the second which was conducted by telephone was at a thirteen-month interval from the original meeting. The data were analyzed through percentage comparisons and the Chi Square test for significance.

The purpose of the Coch and French experiment (24) was to determine why factory workers resisted any change and what could be done to overcome this resistance to minor difference in work routines. The experiment was conducted in the Harwood Manufacturing Corporation's main plant at Marian, Virginia. This plant produced pyjamas and employed 500 women and 100 men whose average age was twenty-three and whose average education was grade eight. The policies of the plant in labour relations were considered to be liberal and progressive. An individual incentive system was used and piece rates were set by time studies and given in units. It often required thirty-four weeks to reach the level of efficiency set by the time study. When it was necessary to

change the pattern of pyjamas with consequent changes in the sewing operations, pay incentives were given to the workers while transferring to the new design. However it was discovered that the re-learning period for experienced operators was longer than the learning period for new operators, and this was true in spite of the fact that many transfers of those who never achieved the standard rating again were omitted from the curve. The resistance to learning a new skill was reflected in the fact that many operators refused to change and left their jobs. This then was the situation in which the experiment was conducted.

The description given by the authors of their use of the group discussion-decision technique follows. In experimental group, one where the group discussion-decision technique was used, the experimenter presented the need for change and this was followed by discussion concerning how to change and still keep up efficiency. Following this discussion the management plan to set new jobs and piece rates were given, and this plan was approved though no formal decisions were taken. The group then chose operators to be specially trained. The meeting with this sub-group was held immediately where the operators presented many good suggestions on how the change could be brought about more easily and worked out the details of the new job. A second meeting was held for the whole group where the special

operators trained the other operators on the new job. In experimental groups two and three all operators participated directly in designing the new jobs and agreed to be studied directly by the time-study man. Although there was no formal vote taken, the group arrived at consensus. In the control group a lecture was given by the time-study man on the different ways of stacking and folding pyjamas and in examining seams and clipping threads. After the lecture a question period was held. All techniques were conducted under the meeting method.

The sample consisted of experimental group one composed of thirteen pyjama folders, experimental groups, two and group three consisting of eight and seven pyjama examiners respectively, and the control group consisted of eighteen hand pressers. The data were collected through observation of inter-group relationships and through checking the performance figures of the groups after the experiment. Data analysis was on the basis of observed differences only.

Maier (56) in a series of experiments exploratory in nature sought to discover whether a discussion leader using the permissive approach to the group discussion-decision technique could obtain solutions superior to those of a group working with a less skilled leader. One of this series uses adults as the sample and is therefore reported here. The problem under consideration was role played,

consequently the criterion of success was quality of solution rather than adoption.

The experimenter who was the discussion leader, handled the leadership role in the following manner: he did not accept the first solution to the problem which was considered a poor solution but rather asked for further suggestions; he indicated that he was concerned with finding a solution to the problem rather than criticizing the work of any particular persons by recognizing that problems always exist in work situations and keeping the discussion away from blaming any particular person. The experimenter had predetermined what the 'elegant' solution would be and the problem-solving results of the six groups of industrial personnel used as the sample were judged by this standard. The experimenter acted as foreman for each group which had to solve the same assembly line problem of a slow worker holding up production. The role-playing situation was acted in front of an audience in each case. The data were collected by having observers watch the role-playing situations and analyzed through their comments on these situations and the solutions offered.

In a further experiment Maier (55) attempted to compare the efficacy of the group discussion-decision process using trained and untrained leaders for problem-solving. The problem was again a role-playing problem simulating a real

life assembly line problem: The experimenter set up criteria in advance by which he judged solutions as successful solutions; compromise solutions; and solutions which would be considered a complete failure. The study was designed so that all members of the experimental groups were given training in advance of the role-playing test and no members of the control groups received training other than a one half-hour lecture connected with introducing the problem for the role-playing discussion-decision to follow. The lecture was on the subject of resistance to change and emphasized the importance of recognizing differences in the attitude of employees, the importance of employees accepting changes in jobs if changes were to be made successfully, the importance of recognizing that all persons do not have the same motivations, and the importance of listening to what employees have to say in order to understand them. Eight hours of training including four hours of group discussion was given members of the experimental groups on the group discussion-decision technique. The eight hours were composed of three two and one half hour periods. Presumably the material covered was similar to that given in the lecture. The sample consisted of industrial personnel composed mainly of first-line supervisors and intermediate management. Forty-four groups of persons with four persons in each group were given training and thirty-six groups of persons given the

one half hour lecture were used as a control. The role-playing groups consisted of a foreman and three other men. The data were collected through recording the solutions of the groups. The Chi Square Test for significance of difference was used on the findings.

Solem (72) sought to test Maier's theory that the intellectual aspects and the feeling aspects of behaviour are qualitatively different through an experiment in which the attitude of the conference leaders to the solution of the problems was the crucial element. He also chose to use role-playing situations to test his hypotheses, and consequently set up criteria for successful, compromise, and failure solutions to the problem.

Two experiments were conducted and will be reported separately, for although the same population and methods of data collection and analysis were used for each, the experimental treatment was different for each experiment.

The adult education technique used in both the committee and the control group of experiment one was group discussion-decision. The problems with which the groups were concerned was to change assembly line procedure to effect higher production. The first group was given roles which made them fellow-foremen or peers of the leader who were to help him solve a problem which the leader had with his work group; the control group were given roles which made

them members of the leader's own work crew who had to solve a problem which they would have to carry out themselves. Each group was organized by a trained experimenter who selected one person from the group at random as a leader and gave general instruction for a group procedure to the group. Twenty-five minutes was allotted to the role-playing. Each experiment dealt with two separate problems (A) and (B) and these were the kind of problems these foremen would be faced with in real life. Problem (A) consisted in deciding which of a crew of workmates would get a new truck and problem (B) consisted in deciding on a change in work procedures.

The sample of the two experiments consisted of 546 supervisors in industry who were taking part in a foreman's conference held at the University of Michigan over a two-day period. Only half the total sample was used for each experiment. Some of the sample had previous experience in group decision techniques and others had not. The sample used in Experiment One, Problem (A) consisted of twenty-two committee groups of six and twenty-three crew groups of six and in Problem (B) of twenty committee groups of four and twenty-three crew groups of four. The data were collected by boarding the results of the problem-solving discussions under certain headings, and analyzed by taking the Chi Square of the difference between the experimental and control groups

in the frequency with which they gave various solutions to the problem.

In the second experiment the leader's role was to present his own (hypothetical) work group with a problem while trying to sell them a predetermined solution. The role given the leader in the control group was such that he would seek the aid of the group in arriving at a solution to the problem which would be agreeable to all. The same role-playing problems were used for Experiment Two as had been used for Experiment One, since Problems (A) and (C) were identical and Problems (B) and (D) were identical. The sample for Problem (C) used under the experimental 'selling' condition was nineteen groups of six and under the control twenty-three groups of six and for Problem (D) was twenty groups of four under the experimental condition and twenty-five groups of four under the control. The data were collected and analysed as for Experiment One.

Findings

Processes. Although some of the experimenters in this section describe the technique as used in the experiment in detail none have investigated the process in action. Brilhart (19) mentions that the revision of the Bales Interaction Process Analysis form was also used to analyse the processes of group discussion-decision sessions and he found

that the categories in which most remarks fell indicated that it was a different type of group discussion from that used under the study discussion method. Observation of the group discussion-decision process using this or other forms would undoubtedly further knowledge of this technique.

With regard to member satisfaction with the group discussion-decision process Bond (16) found that some of the women thought these meetings were futile and a waste of time. Some of the women who were unaccustomed to discussing such topics found the discussion strange and not enjoyable.

Problem-Solving. Maiers' (56) findings in his first experiment were that five of the six groups reached a solution which the experimenter had predetermined as the 'elegant solution' and the sixth group agreed to try a solution for a week and then evaluate. The observers of these role-playing situations agreed that the leader did not furnish the solution. However the observers who knew the solution previously thought that there was some guidance towards the solution. He concludes from these experiments, of which only one is reported, that even an 'elegant' technical solution will not be accepted by a group unless they have re-discovered and accepted the ideas underlining this solution. Hence a merely technical expert will not suffice as the leader of a discussion-decision group.

The findings of Maier's second experiment (55) were

that the groups with trained leaders and members had 59.1 per cent successes, 36.4 per cent compromises, and 4.5 per cent failures. The groups with untrained leaders had 50 per cent successes, no compromises, and 50 per cent failures. By the Chi Square Test for significance these differences are significant at beyond the .001 level of confidence. The experimenter concludes from these findings that training does not markedly increase acceptance of a solution that the discussion leader has in mind, but that such training prevents failures from occurring. Observers to the experiment noted that the main difference between trained and untrained leaders was that the untrained leader tries to sell his solution to the group whereas the trained leader presents the group with a problem which is to be solved. From the data available to this reviewer it appears that not only the leaders were trained in different ways for the two experiments, but the whole population of the experimental group was trained. Consequently the leader with training had a group with training with which to work, and the leader without training had a group without training with which to work. This may have influenced the favourable results of the first group and therefore perhaps the findings are applicable in a situation when both leader and group have been trained in the group discussion-decision technique.

These experiments were carried out with a small

sample and the different groups were not pretested for differences which might affect the outcome. However the action resulting from the experiment is not reported but observed action.

Solem's (72) findings in Experiment One, Problem (A) were that the committee solutions were less complex than the crew solutions to the problem. In the experimental or committee group there were no conditional solutions whereas in the control or crew group 30.4 per cent of the solutions were conditional, which is significant on the Chi Square Test between the .01 and the .02 level of significance. In Experiment One, Problem (B) 30 per cent of the solutions of the experimental or committee were conditional, whereas in the crew or control groups 60.9 per cent of the solutions were conditional which findings are significant between the .05 and .02 level by the Chi Square Test for significance of difference. The researcher concludes that where the findings are significant they support his hypothesis that those (the crew) involved in actually carrying out the solution to a problem will find a more realistic solution to the problem than those (the committee) who are asked to solve the problem but will not be involved in carrying out the solution. Where non-significant trends were found in the data these trends also supported this conclusion. The direction of the solution of each group can be predicted by

referring to intellectual factors only for the group which will not have to carry out the solution and by referring to intellectual and emotional factors for the group which will have to carry out the solution in practice.

The findings for Solem's (72) second experiment Problem (C) were again in the predicted direction. The control or crew group was found to have more complex solutions in a significant number of cases, which according to the author indicates greater awareness of the emotional factors involved. The other notably significant difference between the two groups was the number of dissatisfied group members. The significance here was between the .01 and .001 level of the Chi Square Test and was in favour of the control group, that is there were fewer dissatisfied members in the control group. There was no significant difference in conditional solutions between the two groups. Solem (72) considers that these findings indicate that the leaders who were trying to sell a solution were able to impose their solution on the group but dissatisfaction with the solution was revealed in a significant number of cases through the number of dissatisfied group members.

In Experiment Two Problem (D) Solem (72) found there was significantly more conditional solutions in the control groups, significant to between the .05 and .01 level of confidence by the Chi Square Test.

From the point of view of techniques for learning, this experiment would indicate that group discussion-decision is more effective when practiced by people who will be involved in carrying out the situation than when practiced by persons who will not carry out the solution and who are making a decision for others. Also for persons who will have to carry out the solution arrived at through group discussion-decision is, according to Solem's (72) criteria, a better solution than that arrived at when the leader attempts to sell a pre-ordained conclusion to the group.

The relevance of these findings for a real life situation depends upon the relationship of situations created in role playing to real life.

Adoption. The results of the group discussion-decision technique in effecting concrete individual action seem to be superior to those of the lecture technique. Lewin (53) in his first study found that only 3 per cent of the women who had heard the lectures served a new meat, whereas 32 per cent of those who had participated in group discussion-decision served the new meats. However, reservations as to the validity of the findings must be made due to the fact that the discussion leader mentioned that an inquiry would be made later as to whether a new food was introduced to the family diet only in the experimented or discussion-decision group. In the first Radke and Klisurich (53) experiment the findings

were that after two weeks 45 per cent of the experimental group reported an increase in their families' consumption of fresh milk and 15 per cent of those in the lecture group so reported. After four weeks 50 per cent of mothers in the group decision group reported their families were drinking more fresh milk and 18 per cent of mothers in the lecture group so reported. After two weeks 50 per cent of mothers in the group decision group reported their families were consuming more evaporated milk and 30 per cent of mothers in the lecture group so reported. After four weeks the figures remained virtually the same. Lewin (53) concludes from his experiment that the results of experiment one were not due to the fact that the discussion leader in experiment one was a trained group worker, and the lecturer a trained nutritionalist. In the second experiment the experimenter was trained for the experiment but was not a professionally trained group worker. As in the Lewin (53) experiment the subjects of the group discussion-decision test only were informed of a future check-up, but neither group was informed that a second check-up would be made. The results of the second Radke and Klisurich (53) experiment were also highly in favour of the group decision technique.

The weaknesses in these experiments are apparent in the very small sample used, the lack of preliminary testing of the sample and the fact that resultant behaviours reported

by participants were not checked by an objective measure. The techniques under study were not tested under parallel conditions since only participants in the experimental groups were asked to arrive at consensus. The Lewin (53) experiments may be considered exploratory experiments which tested a new theory of learning and which set the stage for further research in the group discussion-decision area.

Lewin (53) himself comments on the results of these experiments. He suggests the greater effectiveness of group discussion-decision in achieving changed action patterns may have occurred because individual involvement in the group discussion preliminary to the decision is greater than in a lecture group or it may be that the fact of making a decision and committing oneself in a group setting is the decisive factor. Further testing would be necessary to establish the relationship of these variables to the results. He was also interested in the effect of group 'cohesiveness' on the results. Varying degrees of cohesiveness existed in the groups used, ranging from high cohesive as in the Red Cross Groups to medium to low cohesiveness in the housewives' groups to groups in the third experiment where members were not previously acquainted with each other. He notes that since the results favoured group discussion-decision in all three experiments the effectiveness of the technique does not seem to be limited to highly cohesive groups.

Lewin (53) also considers the relationship between the content of the discussion and the effectiveness of group decision. The number of mothers serving the suggested meats was comparable to the percentage of mothers serving evaporated milk or cod liver oil, but the percentage of mothers serving orange juice to their babies was more than double that of the other groups.

Bavelas (9) found that when the experimental group set a production goal of eighty-four units per hour to be reached in five days they were successful despite the fact that sixty units per hour was the standard rate and seventy-five had been considered the ceiling up to that time. In a second meeting also using group discussion-decision the production goal was set at ninety-five units, however this goal was not reached. In a third meeting the decision reached was to hold the hourly production at ninety units for five weeks. The production was stabilized in the vicinity of eighty-seven units per hour. Production was not favourably influenced in the control group where no decision to change was made even when the psychologist requested that participants strive to achieve a certain production goal. Due to the few controls within the design of this study these findings might be considered to be extremely tentative.

Levine and Butler (51) found the performance ratings of supervisors were significantly changed only after the group discussion-decision session. Supervisors from this group

rated workers at low levels the same as previously but brought their mean ratings for workers at high levels into line with these. For both the control and the lecture group the mean rating for the high grades stayed above that of the mean rating for the low groups. The experimenters conclude from this experiment that the force of group decision was sufficient to overcome the resistance to change in habitual ways of thinking and acting.

Although the sample used in this study was small and the characteristics of each group may have been different, an objective test of results in a real life situation was given and the results statistically controlled. The authors make no mention of any group being informed of a follow-up hence the significant difference between the discussion-decision group and the other two would seem to be independent of this variable. The discussion-decision group was the only group asked to arrive at a consensus.

Bond's (16) findings were that the reported practices of the women in group discussion-decision and control groups were significantly different at the time of the first follow-ups and had become much more pronounced by the thirteen-month follow-up. The results for the discussion-decision group were as follows: 34 per cent had received breast examinations by a physician at the first follow-up and 59 per cent at the second follow-up; 51 per cent were practicing monthly breast

self-examination at the first follow-up and 58 per cent were so practicing at the second follow-up; 16 per cent had demonstrated their technique of breast self-examination to their physician at the first follow-up and 36 per cent had so demonstrated by the second follow-up. The findings for the lecture group were as follows: 21 per cent had received a breast examination from a physician at the first follow-up and 39 per cent had received this examination by the second follow-up; 31 per cent reported they were practicing monthly breast self-examination at the first follow-up where only 27 per cent were so practicing by the time of the second follow-up; 7 per cent had demonstrated their technique of breast self-examination to a physician at the first follow-up and 17 per cent had so demonstrated at the second follow-up. These results cause one to wonder whether the follow-up itself does not become an efficient technique for learning. However it may be seen that the results favour the group discussion-decision treatment in every case. The experimenter reports that she studied the relationships between variables other than the technique used and the findings, in an attempt to determine whether these influenced the performance of the women. Since results from the lecture treatment were small in the Lewin (53) studies and almost nil in the Levine and Butler (51) study and this was not the case for the Bond (16) experiment such an analysis is interesting. She found that

significant relationships with outside variables were more frequent with the lecture than with the group discussion-decision treatment. A number of variables seem to have significantly influenced the breast self-examination practices of women under the lecture treatment. These are that lecture participants who had seen the film "Breast Self-Examination" were more likely to begin this practice than those who had not although 50 per cent of the film group had discontinued this practice by the thirteen-month follow-up; lecture participants who had read an article related to breast self-examination were more likely to begin the practice than those who had not. However, women in both discussion-decision and lecture groups who had taken the trouble to write for and read the pamphlet describing the technique of breast self-examination, showed better performance of this practice than did the others. Women in the lecture groups who had known persons with cancer who had recovered practiced breast self-examination in twice as many cases as persons who had not known someone who recovered; those who had known both persons who had recovere and who had died from cancer ranked almost as high as the first group. A very interesting relationship was that significantly more lecture participants who discussed cancer control with someone else after the meeting practiced breast self-examination than those who did not. This relationship was not found to exist in the discussion-decision groups

even though these women reported talking to more persons than those in lecture groups.

With regards to the criterion of demonstrating breast self-examination technique to a physician the researcher found that both lecture and group discussion-decision participants who had had a breast examination with their physician prior to the cancer education meeting were more likely to seek such examination after the meeting. However for lecture participants this relationship held for practice of the other two criterion measures.as well. The only relationship between age and practice of the recommended procedures was that in the lecture group women under forty years of age were more likely to have demonstrated breast self-examination to their physician than were women over this age group. Formal education was not related to performance of any of the recommended practices.

In terms of the Newberry scale these findings would suggest that ego-involvement with resultant engagement in the learning is achieved through devices which make the subject concrete and through participation of the group discussion variety which was sought outside the lecture treatment by some lecture participants. The reasonably high percentages of acting on the part of lecture participants in this experiment may be partially accounted for in that cancer is a much publicized and feared disease and that therefore the women may

have been highly motivated to act before they attended the lecture.

Coch and French (24) reported the results of their experiment as follows. The control group had 17 per cent drop-out in the first fourteen days and reached an efficiency level of fifty units to the hour. The performance was characterized by complaints to the manager, by hostility against the methods engineer and deliberate restriction of production. In experimental group one there was not enough work in the first seven days, however the group still showed a very good re-learning curve. At fourteen days the group showed an average of sixty-one units per hour, and at the end of forty days this was up to sixty-eight units an hour. The group atmosphere was characterized by co-operation and pleasantness. Experimental groups two and three came back to standard faster than experimental group one. Efficiency ratings returned to pre-change level after the first day of change and in forty days the level reached was seventy-two units per hour.

As an extra control on these findings the experimenters brought the original control group, which had been broken up after forty days and its members re-assigned to new jobs all over the plant, back together again. After two and a half months of dispersal there were thirteen members remaining in this group. The discussion-decision technique as used with

experimental groups two and three was used with this group to make a change comparable to that used in the first experiment. It was found that this group recovered their original efficiency rating quickly and then moved on to a new high level of production.

Bennett (14) offers a critique of the Lewin (53) studies in which she cites three principle factors affecting the validity of the conclusions reached. Since the Bavelas (9),Levine and Butler (51),Bond (16) and Coch and French (24) studies have the same concerns as the Lewin (53) research they also may be examined in the light of Bennett's (14) criticism.

First Bennett (14) considers that to contrast a straight information-giving technique such as lecture with group discussion-decision is not appropriate. A lecture-decision technique might prove more effective in achieving adoption of the suggested practices than would group discussion-decision. Second, in the Lewin (53) studies group discussion-decision participants only were informed there would be a follow-up as to whether they had adopted the suggested practices. However this factor cannot be said to affect the significance of the difference between the group discussion-decision and other treatments for the Levine and Butler (51) or the Bond (16) experiments where none of the participants were informed of follow-up, or the Coch and French (24)

experiment where all subjects knew their future performance would be subject to examination. Third she points out that only practices reported by participants are known. This criticism is applicable to the Lewin (53) and Bond (16) studies but not to the Levine and Butler (51) or Coch and French (24) studies where actual practices were tested. Since the lack of confidence in non-objective findings would appear to stem from the fear that participants will report the action they think the experimenter wants, it restores confidence in these non-objective results somewhat, to note that Bond (16) found lecture participants who had voluntarily engaged in a discussion of cancer control after the meeting, reported breast self-examination in a significantly greater number of cases than those who had not thus engaged in discussion. The experimenter was not present at these discussions and yet the results for participants who engaged in them were different than for those who had only listened to the lecture. The difference in reported results in connection with the presence or absence of variables such as use of a film also restores confidence in the reported results.

Bennett (14) designed a study to test the validity of her criticisms and compared group discussion, lecture and a control group in terms of four treatments namely:

1) each condition, group discussion, lecture, and control used alone, 2) each technique and the control group used where members were asked to make a private decision regarding action, 3) each technique and the control group used where members were asked to make a public decision regarding action; and 4) the degree of consensus among members of each group was analysed to discover whether the factor of consensus alone affects action.

The stated purpose of the experiment was to encourage students to volunteer as subjects for psychological and sociological experiments. The sample consisted of 488 University of Michigan students in a beginning course in psychology. She found that the factors of coming to a decision and the perception of group consensus were the only significant factors in causing the students to volunteer as experimental subjects which implies that group discussion-decision is no more effective in achieving adoption results than lecture-decision treatments. She discovered further that more participants in discussion-decision sessions publicly committed themselves to action than in lecture-discussion sessions although no more acted and that more non-actors among discussion-decision participants reported that they had not made the decision to act than did participants under other treatments. A non-significant trend of discussion, lecture and control non-actors to report to decision to act

falsely was noted in that order. In connection with these latter results we have already noted the likelihood that Bond's (16) participants reported truthfully and Levine and Butler (51) and Coch and French (24) discovered through objective tests that changed action resulted from group discussion-decision and not lecture although these experiments did not take account of all the variables tested by Bennett (14). This finding in the Bennett (14) experiment may have been a function of the youth and possible indifference of her subjects.

If her findings on adoption can be generalized to all cases it would mean that restructuring of the total cognitive field of the individual is achieved through coming to and making a public decision to change and that the individual's engagement in the learning results from a request for decision and no overt participation in a group discussion is necessary to think through the ramifications of the change is needed. Bavelas' (9) findings that group discussion used alone was completely ineffective whereas group discussion-decision resulted in changed performance creates food for thought here, even though we know little about the discussion process as used in his experiment. It would seem that decision is a large factor in creating change though it may not be the only one. For instance the question of volunteering or not volunteering to participate in psychological or sociological

experiments would not seem to affect the participants' attitude and value system in the same way as serving formerly reprehensible meats, changing patterns of grading men at low levels of skill or achieving new production goals would seem to demand it.

Another factor which makes it seem the problem under study did not require great attitude changes of the participants is that the control groups, who were not submitted to either technique but merely requested to make a decision with varying degrees of publicity according to the experimental treatment, volunteered in equal percentages with lecture and group discussion participants. It is hard to imagine that participants in the Lewin (53), Bavelas (9), Levine and Butler (51), Bond (16) or Coch and French (24) experiments would have changed their action patterns to the same degree simply on being asked to make a decision. However, this also is subject to further experimentation.

It seems possible that the results in the Bennett (14) experiment were influenced by the fact that her subjects were college students interested in passing a course, and even though the experiment was not related to their results on the course they may have suspected that it was.

Bennett (14) seems to have conceived of all these experiments including her own as persuasion attempts whereas Allport (1) has made it clear that the experiments under the

Lewin (53) framework attempt to engage the participant in rethinking the problem himself rather than coming to someone else's foreordained conclusion. This factor alone may account for the difference in results.

Summary Discussion of the Group Discussion-Decision Technique

Description. A description of the group discussion-decision technique which takes cognizance of the foregoing research would be that group discussion-decision consists in the action of an educational agent in leading group deliberations about a specific problem requiring action so that participants are free to examine all their concerns about the problem and are enabled to arrive at a solution which is satisfactory to themselves. Although the researchers in the present section have been quite explicit as to how the technique was conducted there has been no objective observer analysis of within-technique processes such as Brilhart (19) used for group discussion through revising the Bales Interaction Process Analysis form. The development of such an observational tool might be used to test whether Lewin's (52) ideas as to what happens in the course of the process are correct. Brilhart (19) found on a trial use of the Bales Interaction Process Analysis form that remarks in a group discussion-decision group fell into different categories than remarks in a group discussion under the study discussion

method. In lieu of objective findings on the process the experimenters' hypotheses relating to the process will be presented since these provide directions for future research. Lewin (52) theorizes that for learning which demands changes in the total cognitive structures of the individual to occur old ideas must be 'unfrozen', a new level must be reached, and the ideas at this level 'frozen'. Corresponding to these stages the agent might try to provide opportunities for participants to unfreeze old ideas regarding the problem through encouraging examination of beliefs and attitudes with respect to it; he might insert new information into the discussion as needed allowing members to examine this in ways that would enable them to integrate it into their total cognitive structure and the change would then be 'frozen' by the decision to act on the new ideas. Inherent in this theory is the belief that the participant must become ego-involved in the learning to the point where he actively integrates the material and makes the new learning his own. In this connection it is interesting to note that Maier (56) concludes from his experiments that even where 'elegant' solution is presented the group must rediscover this solution in order to want to implement it. Consequently the agent must structure the technique so that this rediscovery is possible. Solem's (72) results show that solutions are not as tidy when the group which will be implementing the

solution solves the problem, but the solutions are more realistic. There may be differences in the type of process which takes place in a group arriving at the decision for individual or group action.

From the researchers' descriptions it appears that the leadership in all these experiments was permissive in orientation, and that because the individuals were allowed to express their feelings about the implementation of proposed action they became ego-involved and moved towards a decision. All the experimenters in this section with the exception of Bond (16) were trained in social group work or psychology. Lewin (53), Bavelas (9), Levine and Butler (51), Maier (55,56), Solem (72) and Coche and French (24) either conducted their experiments themselves or gave special roles or training to their group leaders. Bond (16) trained herself in the group discussion-decision process and it is interesting to note that of those who led the groups themselves she is the only one who comments on the hostile attitude of group members and their lack of satisfaction with the process. She states that she left her group discussion-decision sessions with the feeling that things were somewhat up in the air and that members had not been on the same wave length with her and that there was some hostility and resentment towards the use of the technique. This might mean that the other experimenters were used to this type of reaction and therefore did not comment on it or that a special

type of training is needed so that an agent can structure this process and still obtain positive reactions. This latter seems unlikely however since Maier (55) remarked that when he used untrained leaders that their response was to try to "sell" the solution to the group, that these persons not being trained in handling negative or hostile feelings and attitudes became quite anxious in this type of permissive setting. This perhaps indicates that for persons not trained in the psychological or social sciences special selection and training is necessary to lead groups where expression of feelings is sought. Bond's (16) results however, suggest that observed participant satisfaction is not a good indicator of the effectiveness of the technique since she observed lecture participants appeared well satisfied with the technique yet did not act on the basis of the information. It seems logical that if in Lewin's (52) terms the total cognitive structure of the individual is challenged he is not going to react with pleasant feelings even though this kind of upset is necessary to any genuine re-thinking of the problem.

In the experiments included here the adoption of new practices has not required a great deal of new information and this could be "fed-in" in the course of one or two sessions. Attitude change seems to be the important factor in adoption of new practices and the attitude changes

required in these experiments does not seem to have been a tremendous threat to the total value system of individuals. Experimentation into attitude change with regard to prejudice might show that much longer term programs and more new information were required.

Devices served to make some of these group discussions more concrete, particularly in cases where a solution was presented to the group such as the Coch and French (24) and Levine and Butler (51) experiments. Bond (16) found that those who took the trouble to get selected reading material were more likely to implement the practices suggested in both lecture and discussion-decision techniques but making the effort to acquire these materials might in some sense be considered the goal of the learning.

There is little comment in these experiments on the physical surroundings used for the group discussion-decision technique. It seems that ordinary meeting rooms or work rooms in the case of the factory studies were used to conduct the discussion with small face-to-face groups. In the conference experiments, (Maier, Solem) many small groups were held in a single large meeting room.

Results. The results of the Bavelas (9) and Coch and French (24) experiments seem to indicate that attitudes towards learning new skills sometimes must be changed before participants will be able to absorb the information necessary

to learning the new skill. Such change can apparently be accomplished through group discussion-decision.

The research seems to indicate that where Lewinean principles are followed, and the group looks at all aspects of the problem they are more likely to reach a workable solution. Also the group which will actually have to carry the plan into action will be likely to come forth with a more complicated, but more realistic solution to the problem. Where leaders attempt to persuade participants of the value of a solution rather than involving them in thinking through a solution of their own the results are inferior. Since both Maier (55,56) and Solem (72) used role-playing situations the objectivity of their results depends on the relationship of role-playing to real life situations. However if future research proves the results of role-playing valid for real-life then Solem's (72) experiments validate the necessity of accounting for social reality at the high concrete participation extreme of the Newberry scale since the solutions of those who would have to carry them out were different and more realistic than solutions of those who would not have to act on them.

Although more experimentation is needed it appears that group discussion-decision is more effective than lecture in creating change in action patterns where such change implies changes in the total cognitive field. The technique

is certainly not totally effective in creating individual change, nor are the results even for all types of change. For instance Lewin (53) found as a result of group discussion-decision only one-third of participants changed their habits of serving meat and evaporated milk while larger percentages changed their patterns of serving whole milk and orange juice. It would be interesting to conduct studies aimed at discovering why this two thirds of the meat and evaporated milk population did not change and whether they needed more time or a different type of structure to allow them to think through the suggested change. One wonders if larger percentages changed their patterns of serving whole milk and orange juice due to the fact that attitudes towards these practices were not so negative. It also seems possible in the Bond (16) study that part of the lecture population already had reasonably positive attitudes towards the suggested practices but required information on how to carry them out.

Bond's (16) findings indicate that progressively more women under the group discussion-decision treatment adopted the practices over a thirteen-month span. These results may have been partially created by the first follow-up which could be interpreted as a persuasion attempt although the experimenter reports she asked for factual information only. However the participants of both techniques

were submitted to the same follow-up treatment and the year-end results were that 60 per cent of participants in the group-discussion-decision treatment were practising two of the advocated practices and 35 per cent were practising the other whereas participants under the lecture treatment, 40 per cent were practising one of the suggested practices, 27 per cent another and 17 per cent a third. It must also be remembered that the number of lecture participants adopting the suggested practices was significantly affected by small group discussions which took place spontaneously after some lecture treatments.

A compact statement of the results of the use of the group discussion-decision technique would be that these techniques can be used to effect change in action patterns. The technique as tested so far, effects change in small concrete tasks, where the goal is individual adoption of a new practice or problem-solving resulting in group action.

It would also be interesting to examine the group discussion-decision process in connection with abstract goals. It is possible to make a decision about changing abstract goals or is such change created in the individual on longer term basis as a result of new information and permissively led group discussion?

It would seem that the findings of group discussion

FIGURE 12

GROUP DISCUSSION-DECISION TECHNIQUE PLACED ACCORDING TO THE QUALITIES OF THE LEARNING EXPERIENCE

	1	2	3 Slightly Abstract	4 Near	5 Real Life
Sustained for some 3					
Sustained for all 4					
Total part 5			Bennett	Maier Solem	Lewin Bavelas Levine & Butler Bond Coch & French

decision are not conclusive and that there is room for a great deal more experimentation in this area before the Newberry scale will be validated. Experimentation is needed to discover whether lecture-decision and discussion-decision are equally effective for all populations and for all tasks in achieving action goals. Decision may be seen as a participation technique which when coupled with lecture will create ego-involvement and be more likely to achieve results in changed action. However decision coupled with a high participation technique such as group discussion would be expected to provide opportunities for thinking through deeper problems and result in change which is more difficult for the individual to make.

VII. CONJUNCTION OF TECHNIQUES

Organization of the Section

Several experiments which would seem to be pertinent to the subject of this thesis deal with the results of a group of techniques used together to achieve a goal. Such experiments indicate that the researcher is combining what seem to him appropriate techniques under a method to achieve a learning goal. Thus these experiments might lend insight into the validity of the Newberry classification scheme.

The experiments in this section lend themselves to classification by learning goal sought. Solomon and Miller (73) are concerned mainly with process; Solomon, Bezdek and Rosenberg (74) with information learning and comprehension; Auerback (6,7) is concerned primarily with the acquisition skills although also with information learning and adoption; Houle (42) with skills; Bavelas (10) and Lewin (10) and Dotson (30) with adoption.

Research Designs of the Studies

The purpose of the Solomon and Miller (73) experiment was to investigate teachers' classroom behaviour and develop hypotheses concerning teaching styles. This exploratory study was conducted with the hope that patterns of teacher behaviour might emerge which could be used as a preliminary description of teaching style and would provide the basis for more detailed experimental study.

The sample was twenty teachers, mostly teachers of adult groups. General categories of teacher behaviour derived through group discussion were used as the basis for interviews with fifteen members of the same sample in order to discover more about teaching style. The teachers were asked to describe their teaching styles in terms of the general categories discovered in the preliminary experiment but they were asked not to talk in terms of gross

descriptions such as student-centered versus teacher-centered but in terms of smaller or more specific behaviours. The interviews included attitude to teaching and objectives in teaching as well as large and small means of reaching these objectives. These interviews were recorded and later transcribed. The data from the interviews were then arranged into categories developed by the staff from the interviews.

The Solomon, Bezdek and Rosenberg (74) study was conducted to explore further clusters of teacher behaviour which unite to create teaching styles and which are related to learning goals. The sample consisted of twenty-four teachers of evening courses in American Government, ten of which taught in a large eastern urban college and the remaining fourteen of whom taught in midwestern colleges with no more than two teachers at any one school. While the class was not the sample in this experiment it is interesting to note the characteristics of the classes under study so that one might know how far these conclusions regarding teaching style may be generalized. The researchers found class size to vary from eleven to thirty-eight students, the age of students ran from sixteen to sixty with the median age twenty. The course membership was mainly masculine with the percentage of males in each class ranging from 42 per cent to 100 per cent. The percentage of working students varied from 4 per cent to 96 per cent with eighteen of the twenty-four classes

having 50 per cent or more of the students working full time. Other students worked part time. The course was a first year credit course in American Government. It should be mentioned here that all the teachers were teaching the same evening course in American Government. Thus it may be possible to have a more controlled look at teacher behaviour than in the previous experiment where the content ranged from the social sciences to the aesthetic arts and may have demanded different teaching styles on the basis of subject alone.

The data were mainly collected in three ways. The first of these was that two separate teams of observers visited one class of each instructor during the middle of the semester. They observed teacher behaviour and made ratings for thirty-eight items on a standard form immediately after the class was over. The rating instrument was made up of eight-point scales on such items of teacher behaviour as "direct control," "threatening behaviour," "understanding," and "sensitivity". The ratings given a teacher by the two different sets of observers were compared statistically and showed fairly similar results indicating according to the researchers both that the instruments were fairly reliable and teacher behaviour remained fairly constant between visits. The observers also tape recorded the class sessions which they attended and later on the speech of teachers and

students was recorded according to categories. Those who recorded the tapes into categories were checked for inter-coder reliability at the end of a training period and half-way through the checking time. The reliability was found to be satisfactory. A third method of data collection was through fairly long questionnaires administered to students towards the end of the semester. Answers were checked in terms of five-point rating scales and gave information on both generalized and specific teacher behaviours. Eight items requested the student to evaluate the instructor, the course, the amount of learning which resulted and the interest which was created in the subject. A fourth instrument was a questionnaire submitted to teachers at the end of the course asking them to state their feelings about the course, their goals in teaching and their motivation. In terms of learning achieved the data were collected through a multiple choice before and after questionnaire containing two parts: part one was composed of thirty-five items and measured the factual information which accrued from the course; part two was composed of ten items and evaluated the students' comprehension of difficult passages.

The first four methods of data collection together produced 169 items referring to teacher classroom behaviour. This data was subjected to factor analysis (Univac Factor Analysis program) to determine which variables tended to

cluster together, the assumption being that variables which cluster together have something in common and factor analysis attempts to describe that something. Data analysis of the questionnaire measuring student learning was accomplished by subtracting post-test from the pre-test scores, then in order to correlate teaching style with student learning three separate types of data analysis were used. For one, teacher scores on each factor were correlated with class means for each of the learning measures to evaluate direct linear relationships between teacher behaviour and student learning. A second analysis was carried out to determine whether a non-linear relationship existed between teacher scores and student learning on some factors. Teachers were divided into upper, middle and lower thirds according to their scores on each factor and compared with individual student's scores by means of Chi-Square analysis. A non-linear relationship would mean that students did well with a teacher in the middle range of a factor but not with those at either extreme or that he did well with those at the extremes but not well with the one in the middle. Thirdly, an analysis of variance was conducted to allow the experimenters to look at the interaction between teachers' factor scores and certain student and classroom behaviours and their effect on learning.

Auerback (7) described the different techniques used in a workshop experiment the purpose of which, so far as

concerns this review was to give nurses skills over and above their public health training in use of newer methods of conducting parent and expectant parent groups. The workshops consisted of thirteen weeks of three weekly sessions one and a half hours each. These sessions were structured into theoretical, observation and seminar periods and the seminars (described as discussion groups where problems and questions most on participants' minds be brought up) appear to have been permissively led discussion sessions. It is stated that the technique is similar to the one used with parents which is described as discussion where the parents share their experiences and their feelings in relation to factual material dealt with in the discussion.

The lecture technique was used for two purposes: first to convey content on parent group education; and second to give information on techniques on group discussion leadership.

Individual supervision was used to try and develop in the nurses certain techniques and skills of leadership through focusing on their level of performance with actual ongoing groups.

The process demonstration technique was also used in that nurses observed groups being led and studied group records.

The sample consisted of fifteen public health nurses

whose range in age was from the late twenties to the mid fifties. They represented different race and cultural backgrounds and included two consultants at the state level, one supervisor and twelve staff nurses. The data were collected through nineteen instruments to measure the responses of nurses to the training program.

The second experiment by Auerback (6) was conducted to help nurses recognize the social and emotional as well as the physical changes that accompany pregnancy. These nurses were to be involved in programs of helping parents prepare for labour and delivery, the care of a new baby and so on. The training was carried on over fifteen weeks and consisted of: weekly lectures on the subject matter presented by psychiatrists, psychologists, educators, and cultural anthropologists; observation of group techniques and study of group records; a group seminar which appears to have been conducted in a permissive manner; and field work under supervision.

The sample was two groups of public health nurses who had received the same kind of training for post partem care as was reported in the previous experiment. There were eleven nurses in one group and twelve in the other. Methods of data collection and analysis are not reported.

Houle (42) sought to examine off-duty programs of the armed-services in the Second World War, to make an

overall description of such programs and to indicate their major implications for adult education. He compiled his material by analyzing descriptions of and research on such programs.

Bavelas and Lewin (10) sought to test whether certain techniques used over a period of time would rapidly change the orientation of leaders. They also wished to discover the effect of retraining on the morale of the leaders and the effect of changed leadership patterns on the behaviours and the morale of groups led by these leaders. The sample was three leaders on a W.P.A. project selected so that age and habits of long standing would make retraining a particularly difficult job. A group of three leaders matched for age, sex, length of time on W.P.A., and technical and leadership ability was used as control. The experiment was conducted as a three-week workshop held for two hours each day, at the end of the children's recreation program. The training technique included: group discussion centered around problems leaders had had with their groups and materials they had read on leadership and on films made of their performance prior to training; observation and evaluation of each other leading groups; observation and evaluation of leaders' ongoing performance with groups by the supervisor; and demonstration of authoritarian, laissez-faire and democratic techniques of leadership by the supervisor.

The data for the experimental and control groups were gathered by observing and quantitavely recording the behaviours of these leaders with children both before and after the experiment. Recording included the effect of the leaders' behaviour on the way the children organized themselves into work groups. Film records showed the group in action. The data where analyzed by graphs and simple numbers.

Dotson (30) sought to discover whether different combinations of the same two techniques would be differentially effective in achieving learning goals. Three combinations of two different techniques were used as follows: Group A included six periods of on-farm instruction and two periods of classroom instruction; Group B consisted in eight periods of classroom instruction; Group C consisted of three periods of on-farm instruction and five periods of classroom instruction. Group D, the control group, was not given the special unit of instruction on budgetary analysis. It should be noted that on-farm sessions were individual sessions. The lecture technique is described as periods of organized systematic classroom instruction. Other techniques may have been included under the classroom instruction but this is not apparent from the abstract. The individual instruction is simply described as systematic organized on-farm instruction. The sample consisted in eighty-nine young adult farmers who received the budgetary analysis course in sixteen co-operating

schools. The control consisted of twenty-five farmers who were enrolled in classes in the co-operating schools but did not take this unit. All told, nineteen schools and 114 young adult farmers were represented in the sample. The data were collected through three instruments: the General Principles Test; the Approved Practice Test; and the Decision-Making Test. The data were analyzed through analysis of variance, co-variance, Snedecor t-test and the Snedecor Relative Efficiency Test For Co-variance. The data was tested at the 5 per cent level of significance. The material presented here on data collection and analysis is not detailed since only the abstract of this study was available.

Findings

Processes. As a result of the first part of their experiment Solomon and Miller (73) uncovered three major elements in the learning process. The first of these was the student-centered classroom. Interpretations of student-centered ranged from appreciation of the student as a changing individual to a "dramatic socratic transaction between teacher and student". The second was that the subject-matter was the important focus and that it was valuable for its own sake rather than as an influence on the student at a particular time in his life. The third of these elements was that the subject ought to be related to the student in such a way that

it can help him solve his own problem. The authors found that for the teachers they interviewed, two of these elements seemed to be ground and one was figurative.

Solomon and Miller (73) discovered the data could be subsumed under general categories. The first of these was the perceptual-cognitive category and under it was included the teacher's goals, his direction of interest in relation to the students, the subject-matter, or the act of teaching and his class orientation. The second was a behavioural category under which teachers reported their classroom behaviour. Each of these categories was found to consist in three major sub-categories. The teacher behaviour subsumed under each category are given in detail in the study but will only be reported here as they appear in clusters of teaching behaviour. Further data analysis was carried out to see if any of the items under these six sub-categories occurred together, the hypothesis being that if this did occur there was some reason significant for teaching style. The experimenters mention that the clusters uncovered through statistical techniques are crude and exploratory due to the small size of the sample, the derivation of categories etc. However, several clusters with relatively high correlations among all items within them at least one of which was a statistically significant correlation were revealed. The correlation between the items in different clusters was

either low, positive or negative. The clusters were as follows:

Cluster 1 - Businesslike, Objective, and Personnel

The direction of interest was towards the subject matter. The teacher tends to see the class as a unit with common rather than individual needs and controls the presentation with some expectancy of student response and change in plan to accommodate it. The emotional qualities were relaxed and accepting and the methods of stimulating students were to present material without expressing opinions about it.

Cluster 2 - Emphasis on Communication

The teacher placed emphasis on student-student interaction based on a plan of the teachers which was subject to change according to student response. Teacher presentation and teacher-student interaction was also used. The methods of stimulating students was class discussion of student's work, the method of allaying anxiety was opportunity to communicate with the instructor.

Cluster 3 - Personal Approach

Emotional qualities were relaxed and accepting. The method of stimulating students was to give the students a chance to practise a particular method or discipline and to pose problems and ask questions regarding individual experiences.

Cluster 4 - Self-involvement

The goal was to produce greater self-awareness and emotional discovery. The direction of interest was the act of teaching. The method of stimulating students was to present material and express an opinion about it and to use small groups.

Cluster 5 - Sensitivity towards students; interest in students

The direction of interest was the students. The method of stimulating the students was sensitivity to the need for continuation. The method of presenting the subject-matter was the use of analogy.

Cluster 6 - Protective Behaviour

The goal was to give the student ability to relate the subject to social or practical problems. The method of stimulating the student was to actively support group process from interference. The method of allaying anxiety was to accept and expand student contributions.

Cluster 7 - Stimulating the Student

The goal was to get the student excited and involved in the subject. The method of stimulating the student was to play the ham and to use humour.

It is interesting to note, and it will be referred to again later on in connection with the classification scheme, that the experimenters found that no matter which way

a teacher reported he organized the class process he always implied or directly stated that he deliberately directed learning to achieve certain goals. Furthermore the teachers revealed that they planned shifts in their control. The teacher might use a lecture for ten to twenty minutes to provide information and follow this with open discussion or ask leading questions of the students.

In the Solomon, Bezdek and Rosenberg (74) experiment factor analysis revealed eight factors of teacher behaviour which the researchers interpret to represent bi-polar concepts. These factors and their general characteristics follow:

Factor 1: Permissiveness versus Control

It should be noted that the permissiveness as discussed here perhaps reveals another dimension than the type of permissiveness that is discussed in the permissive group discussion section. Where there is a definite content to be covered such as a course in American Government permissiveness would seem to imply free discussion relating to the subject but that participation must always be brought back to this particular subject whereas in the case of permissive group discussion it would seem that any subject in the general area of attitude is permissible. In the present study the permissive end of the factor seems to be characterized by teacher's encouragement of hypothetical opinions and

interpretation of the content on the part of students and a wide-ranging interest in the subject-matter not limited to immediate content. The authors note that such phrases as "encourages argument," "inter-student discussions," "relaxation of atmosphere," "flexibility," "lecture discussion shift," and "encouragement of free expression," may be used to describe the behaviour of this type of teacher, such teachers "show respect for the student," and "give individualistic treatment," of students; he or she allows students to "practise use of methods of analysis". A seemingly incompatible correlation is the fact that shift appears to occur from discussion to the lecture technique; however the experimenters feel that it may be primarily the fact that the lecturer shifts techniques as the occasion demands, a sign of flexibility, that is being noted rather than a shift in a specific direction over a period of time. This interpretation would be compatible with the general picture since flexibility is a component of "permissiveness". The negative loadings for this factor seem to imply direct teacher control and emphasis on factual material, on efficiency and organization with the teacher dominating classroom procedure to a high degree.

Factor 2: Lethargy versus Energy

The highest loading under this factor is "energy," which includes "enthusiasm," "rapidity of speech," "mobility,"

"amount of gesturing," "expressiveness," "overstatement". The authors point out that this energy is apparently not aggressive or unfriendly but is coupled with an interest in the students as exemplified by the high loadings of descriptive items such as "positive reinforcement," "acceptance," "continuation of interrupted discussion," "sensitivity," (meaning the teacher's watchfulness for and response to student's reactions to his behaviour) "sheltering," "respect for students". Such teachers also have concern for students' self-awareness and values. Relatively high loadings are given to "comfort," "relaxation," and "use of humour," indicating, according to the authors, that control, natural and confident energy rather than a nervous energy is illustrated here. Other correlations indicate that such "energetic teachers," are perhaps not primarily interested in factual information. At the opposite end of this factor "nervousness," "dependency," and "student control," depict teacher behaviour along with a high loading for "factual" discussion. The authors suggest that the picture here portrayed is one of a teacher who is ill at ease, insecure and unconfident.

Factor 3: Aggressiveness versus Protectiveness

At the aggressive end of this scale five difference indicies show high loadings of expressed disapproval of students' statements. High loadings also occur for such indicators of teacher behaviour as "criticism of students,"

"needles students," "ridicule, threatening behaviour," "challenging or embarrassing techniques," "flippancy to students," "use of shock," "hostility," and "rejection of student contributions". However the authors note that one or two items at this end of the scale received positive loadings which seemed to be in contradiction with this former pattern such as "try to get all students to participate," "pose general problems," "ask questions about subject-matter," which they suggest indicates that teachers at this end of the scale may be using aggressive provocative behaviour to create student's interest and participation. Five items receive high loadings at the other end of the scale. These are "sheltering," "treats student as his equal," "listens attentively". The general picture here seems to be one of behaviour which is amiable, accepting of students and approving. The authors suggest that factor three may have something in common with factor one, where the "aggressive teacher" is using various methods of focusing attention on the task whereas the "protective teacher" is more interested in a pleasant social setting.

Factor 4: Obscurity, Vagueness versus Clarity, Expressiveness

The items which receive high loadings under this factor would seem to indicate that teachers who are termed clear and expressive are able to perceive the meaning of

student's statements accurately and therefore are able to respond to the question or the request for information precisely. Behaviour described as "dramatics," "humour," "enthusiasm," and "comfort," also receive high loadings which the authors consider may mean that these qualities aid the teacher in his perception of the communication. At the other end of continuum items such as "monotonous and dull," "loss of control," "uneasiness," "ends discussion prematurely" receive high loadings. "Interpretive statements" also receive high loadings at this end of the factor which the authors interpret to mean that because communication is not clear there are attempts by students to interpret the teacher's information and by the teacher to interpret or expand a previous statement.

Factor 5: Encouragement of Content-Related (factual) Student Participation versus Non-Encouragement of Participation; Emphasis on Student Growth

The authors note that the highest loaded item at the positive end of the factor seems to contain within itself most of the elements which make up the remainder of positively loaded items. These are high information and positive reinforcement. The positive reinforcement denotes student participation since reinforcement is defined as feedback from the teacher over a student's question. Five feedback items have high positive loadings which indicate that

the teacher is encouraging participation of a factual nature as indicated by the first three feedback items. The authors note that it is more natural to expect participation to be related to broader interests than a purely factual emphasis so that this finding represents new information on teaching behaviour. The other end of the scale also gives a novel picture from the point of view of conventional concepts of teacher behaviour for it depicts a teacher with broad and even "liberal" objectives who gives little encouragement to student participation and places emphasis on material which seems to go beyond the facts.

Factor 6: Dryness versus Flamboyance

Items which created the judgment of flamboyance are "material opposed to commonly accepted attitude," "use of shock," "dramatics," "playing the ham," "humour," and "deliberate overstatement, exaggeration". Persons at this end of the scale tended to be flexible and sought argument and expressed opinions. Items with high loading at the "dry" end of the continuum were "objective, increase student's factual knowledge," "objectivity of presentation," and "organization".

Factor 7: Encouragement of Student's Expressive Participation versus Lecturing

The authors note that the participation encouraged here is of a more creative or personal nature than that encouraged as factual participation in factor five. High

loadings are given such items as "encouragement of student class contributions," "try to get all students to participate," "encouragement of free expression," "encouragement of student dramatization of concepts, problems," "questions about student's individual experiences". Interpretative items also received high loadings which may indicate teacher concern with theory and explanation. Items dealing with discussion-lecture shifts and "relaxation," are given high loadings and may the authors suggest, denote teacher flexibility. Two feedback items containing high information as a component occur at this end of the continuum. The researchers consider that since information in these items is combined with negative or non-reinforcement it may mean that this series of behaviours described a teacher who answers factual questions with precision but does not encourage the same. The only highly loaded item at the lecturing end of the scale was amount of teacher lecturing.

Factor 8: Warmth versus Coldness

Behaviours which receive high loadings at the warmth end of the continuum were "expresses approval of student's work," "protecting behaviour," "use of humour," "humour as distraction," "easy-going, informal" as well as items which the author suggests can easily be seen as designating warmth though are not usually part of its definition "made changes in presentation of material," "spoke with expressiveness,"

"teacher requests opinion". Other items center around an interest in the student's development of skills with the emphasis on cognitive or intellectual skills. These are "give student ability to use certain practical techniques," "give student ability to relate subject to social problems," and "give student ability to use methods of analysis". Other intellectual skills receiving high loadings were "demonstrates use of methods of analysis" and three items dealing with hypothetical statements by teacher and students. The authors conclude therefore that there is some strong relationship between warmth and desire on the part of the teacher to develop intellectual skills in the learner. At the coldness end of the continuum the only highly loaded item is "semester shift from mostly discussion to mostly lecture". The authors note that this does not seem to describe the quality of coldness although allowing for less and less student participation may signify coldness. However as was noted in the discussion of factor one, these "shift items" may not designate the behaviour they were intended to designate.

Students in the Solomon, Bezdek and Rosenberg (74) experiment evaluated teachers who showed warmth and clarity most favourably. This finding seems to agree with the findings of Bair and Hollander (8) on student preference for certain teacher attributes.

It was found that students with jobs did best with teachers who were relatively aggressive and who emphasized students' factual participation. Women were found to gain more factual information in classes with teachers who scored high on lecturing. Students below the age of nineteen learned most factual information with teachers who emphasized student growth but students nineteen and over learned most with teachers who emphasized factual participation. There was no discovered interaction between teacher behaviour and social characteristics of the students in terms of comprehension.

Class size was found to effect student learning of factual material in relation to teacher type. Members of large classes learned factual information best with teachers who were at the permissive end of the continuum in factor and who emphasized student growth and were in manner warm and flamboyant. Students in small classes did best with teachers who lectured and were relatively "dry" and who emphasized student factual participation. These findings may be found to be related to Hill's (41) findings, that members of large lecture classes made more friendships during the course than did members of small lecture classes. The findings from these studies suggest that further experimentation into interaction between class size and process would prove interesting.

Auerback (6) in her second experiment found that the

seminar which by her description was permissively led was the one technique of the program about which trainees had some negative feelings and which they thought could be shortened. However she observed that over a period of time the nurses came to take greater responsibility as discussion participants for initiating topics of importance to them and that through participation they learned how parents feel about exposing themselves in group discussion. This observation would seem to support Bond's (16) observation that members learned most from the technique least acceptable to them.

Houle (42) concludes from his review of voluntary programs in the armed services that the ability of teachers of adults may be markedly improved by training in methods of instructing mature students. He noted also that students in the armed services program considered the quality of the instructor to be one of the most effective factors in the success of programs. He found informality of approach to be a positive factor in teaching adults. He discovered that a variety of methods in his terms, techniques in ours is better than reliance on a single technique and that more learning occurs if the student is constantly made to feel responsible for his own education.

Information

Solomon, Bezdek and Rosenberg (74) found that gains in factual information were related to teachers' scores on factor four which was at the clarity expressiveness end of the continuum and factor seven at the lecturing end of the continuum. The researchers consider that these are logical correlations since clear expressive lecturing appears to be an ideal way to convey factual information. They discovered that gains on the comprehension test were related to a moderate position on factor one on the permissiveness-control continuum and with the "energy" "aggressiveness" "flamboyance" poles of factors two, three and six respectively. The experimenters consider that these attributes in teacher behaviour may have in common the effect of engaging student involvement in the subject-matter and in encouraging him to think about it and try to understand its complexities.

They note that by the Fisher Exact test a positive relationship was observed between factual gain and the text used by various midwest classes. This finding should be kept in mind when comparing the learning with teaching style. The authors point out that there is no comparable relationship between assigned readings and comprehension gain.

Auerback (6,7), as a result of the combination techniques used in her experiment, found that most of the new knowledge gained by nurses in child development and parent-

child relationships was connected with the psychological and emotional growth of the children. Nurses also learned that attitudes and feelings play a prime role in parent-child relationship so that change efforts have to be directed toward attitudes. She also found evidence that there was a greater understanding of the principles of group discussion technique and that there was some change towards a greater refinement of understanding of the group discussion technique as compared with lecture or lecture demonstration technique.

Skills. Auerback (6,7) found that the nurses in her experiment improved their discussion leadership skills in two directions. These were that they had increased sensitivity regarding the elements of group discussion and secondly that they were better able to function as group leaders in a permissive group discussion setting.

Auerback (7) remarks as a conclusion to her second experiment that the project showed that public health nurses can acquire new skills in the leadership of this type of group but that the learning is slow, uneasy and the stress was placed differently for different individuals.

Houle (42) found several general principles of instruction emerged from his survey of voluntary adult education in the armed forces. With relation to developing skills these were that adults will learn to do a task better if careful explanations are given as to the immediate goal

and the long-term goal. He also found that when the basic theory behind a skill is explained the learning of the skill will progress more easily.

Attitude and Adoption

Auerback's (7) material in the first experiment suggested that the more authoritarian the personality of the nurse the less likely the training was to be effective. In her second experiment Auerback (6) found that the results for the two of the three groups of nurses suggests that those who scored on the pre-test as least authoritarian were those who in most cases seemed to have changed the most during the program in relation to the categories of emotional investment, intellectual understanding, flexibility, the ability to raise questions and the ability to use the group discussion method (technique). This correlation did not hold for the second group of public health nurses which result the experimenter thinks may be due to the fact that this group was more homogeneous on the authoritarian scale.

Auerback (6,7) considers that there is clear evidence in the results of nurses' ability to grow through supervision in field work.

Bavelas and Lewin (10) found that before training the three leaders they were working with were quite proficient at the skills they were teaching. All three were fairly

authoritarian in their leadership role which was reflected in their children working singly rather than as a group. The leaders were apathetic, disliked their work and were insecure about their continuation in the job. They were resistant to participating in the experiment since they felt it would set them apart.

The experimenters, who judging from their pre-experiment observations selected quite authoritarian personalities with which to work, found that as a result of the use of a combination of techniques, including permissive group discussion, the observed actions of these individuals changed so that noticeable differences in their groups' action patterns resulted. As a result of the experiment in which lecture, observation and demonstrations of different kinds of leadership were used, as well as permissive group discussion the trained leaders changed their leadership behaviour, from an authoritarian role where the children were dependent on them and all had to do the same thing, to a "group method" where the children were encouraged to co-operate with each other and submit their own ideas.

The success of the program was evidenced in the fact that double the number of children were attracted to the group, the group showed considerable enthusiasm and persistence and there was greater output of work and greater evidence of self-discipline among the members. When the experimental group

were compared with control groups it was found that the children had formed more sub-groups than had the children in control groups. This was felt to be a result of change in leadership orientation. Due to small sample size and lack of tests of significance this study can be considered only a pilot study. It would be interesting to see other experiments along these lines for such experimentation would contribute to knowledge about how attitude can be changed through learning experiments.

Dotson (30) found that the experimental groups tested in his study were significantly better than the control group. However he found no significant differences in learning from the various combinations of lecture and the individual on-farm techniques as measured by either the General Principles Test or the Approved Practices Check List. A significant difference was apparent on the Decision-Making Test such that relationship C or the combination of three on-farm instruction periods and five classroom periods, were significantly more successful in achieving learning by this measure than the other combinations.

In summary it may be said that these experiments are only suggestive of the research which could be done on combinations of techniques to achieve learning goals. The two studies carried out under the auspices of the Center for the Study of Liberal Education for Adults indicate that different

processes within a lecture technique may achieve the goals of factual information and comprehension. The Auerback (6,7) and Bavelas and Lewin (10) experiments seem to indicate that while information is necessary to changes in action based on attitudes practice in the new behaviour is essential and may be successfully combined with permissive group discussion centered around the subjects' concerns regarding attitude and action to achieve results.

The experiments reported here are however merely exploratory and the results suggestive. A program of carefully designed and controlled experiments is needed to adequately test these hypotheses.

CHAPTER IV

FURTHER SUBSTANTIATION OF THE CLASSIFICATION SCHEME AND ANALYSIS OF FUTURE RESEARCH NEEDS

I. INTRODUCTION

The purpose of this thesis as stated in Chapter One page five is to review the research pertaining to the techniques of adult education and to assess whether the results can be categorized under any conceptual scheme which would be useful to the practising adult educator. Such an analysis should indicate areas where research on techniques is lacking.

The first task of this chapter will be to assess whether the research examined in Chapter Four supports the Newberry (Verner, Concept Scheme, 85) scale for classifying techniques.

II. FURTHER SUBSTANTIATION OF THE CLASSIFICATION SCHEME

Traditional childhood education appears to make the assumption that all new learning is purely informational, consequently the emphasis has been on the lecture technique with subsidiary use of other information-giving techniques. The research reviewed in Chapter Three suggests that the lecture technique is most effective for the dissemination

of information when the audience perceives that information as factual and not threatening to their value structures, and when, intellectually, they are able to comprehend the information with ease. Thus Hill (41) found that the most highly educated elements of his population learned most information from the lecture technique and Palmer and Verner (66) found their highly educated population learned most from the lecture though not significantly more than from group discussion or from a combination of the two techniques. This same information might be integrated by others only through the process of developing the mental skills to cope with abstract ideas. Thus Carlson (22) found all participants gained equally from lecture and group discussion and Hill (41) found all but the educated elite gained equally from the two techniques. These results have not yet been submitted to long-term testing to determine whether participants under one technique retain the information better than under the other treatments.

Hearne (40) and Bond (16) both found that when the lecture technique was supplemented with concretizing devices or group discussion significantly greater adoption of the advocated practices resulted.

In certain instances it seems that the lecture technique can be as or more effective than participation techniques in creating attitude change. Soffen (71) found the

lecture more effective than case study in helping participants change their attitudes towards adult education in the professional direction while McGuiness, Lana and Smith (60) found group discussion did not help participants change their attitudes further than the showing a film alone. Further in the Lewin (53) and Bond (16) experiments it is evident that certain groups in the population did adopt new practices merely as the result of hearing the lecture. However both Soffen (71) and McGuiness, Lana and Smith (60) indicate surprise at these results and posit that the population they are dealing with has no attitudinal resistance to change. In fact the initial attitudes of participants under both experiments were in the desired direction and thus it appears that new information was seen as factual rather than as challenging their total cognitive structure. Also the results of these studies were short-term [Soffen (71) re-tested after four months] and longer-term testing might reveal different results. For instance Torrance (87) found that a problem-solving critique given in lecture form was more effective in creating immediate improvement in problem-solving skills than a group-initiated critique but extra-experimental results showed that the group which participated in the leaderless group discussion showed the most significant improvement in performance.

From Hill (41), Davis (27) and Shapiro (68) it

appears that those with least confidence in their present knowledge or those with attitudes in conflict with those of the dominant members of the group tend to drop out of group discussion. However Hill (41) found these persons remained in the lecture groups and changed their attitudes somewhat over a period of time in the desired direction.

Therefore it would appear that the lecture technique is useful in achieving information, attitudinal and adoption forms of learning where motivation to change is high enough that the participant will propel him or herself into the learning situation and where, in Lewin's (52) terms, the individual's total cognitive structure, is not threatened by the new learning or if it is he can move at his own pace in acceptance of new ideas without threat from without.

Brilhart (19) and Hadlock (37) have demonstrated that critical thinking abilities can be developed through the use of group discussion techniques and Solomon, Bezdek and Rosenberg (74) found that comprehension resulted when teachers were moderately permissive in approach and showed "energy," "aggressiveness" and "flamboyance". Thus it seems that mental skills can be developed through participant techniques though there is very little research in this area. It seems very apparent that motor skills can only be developed through participation, and research in this area shows that the greater the effort that is made to engage the learner's

attention and to concretize the learning situation, Townsend (82), while providing for active practice, Draegert (31), Mason (58), the more likely the individual is to achieve the desired results. However again, it must be posited that such learning occurs when there is no participant resistance to the learning, such as Coch and French (24) found in exposing sewing operators to learning the skills of making new articles.

The real test of the Lewin (53) hypothesis comes with the experiments which fit the high participation, concrete end of the Newberry (Verner, Adult Education - A Concept Scheme for Identification of Processes, 85) continuum where the attempt is made to engage the participant's ego in changing attitudes and ideas on which he may have previously based his raison d'etre. Few conclusions may be drawn from the research on permissive group discussion due to the weakness of study designs and the consequent lack of relationship between process and findings. It seems unlikely that where the total cognitive structure of individuals is subject to challenge by new learning such persons are going to present themselves to be "changed". Hence it will be noted that the experimenters, concerned with this area of learning have largely gone to already formed groups in the society, Lewin (53), Bond (16), Bavelas (9), and Levine and Butler (51) where change could take place in a realistic social setting

and consequently individuals were free to change in relation to other members of a group significant to them and from whom they could derive support in the process of changing.

This observation would seem to have relevance for method which is the agent's means of organizing a particicular population for learning. Techniques at this vertex of the continium would seem to require a method of approach through the proposed learner's natural societal setting.

The research reviewed here indicates that group discussion-decision is effective in creating attitude change and adoption where the individual is not accesible to change through non-participant techniques such as the lecture. At least the results of these studies one of which, Bond (16), includes a long-term performance test suggests that high overt participation in a socially real and therefore concrete situation achieves better results in terms of changed behaviour than does low overt participation in an abstract situation.

Bennett's (14) criticisms which were discussed in the group discussion-decision section, challenge this theory. Her hypothesis, substantiated by her research, is that ego-involvement is secured only through decision and that social reality, in terms of reaching on-going groups is not really a factor. In terms of adult groups when attitude change involves the total cognitive structure of the individual

(Bennett's request for change would not seem to involve any very important aspect of the lives of the college students tested by her) group discussion would seem to be an important factor. It might be remarked that Bavelas (9) found permissive group discussion without decision was completely ineffective in changing production goals. However, Shapiro (68) found that significant attitude change did result from his experiment using, it appears, permissive group discussion over a period of time and Bond (16) found members of lecture groups who engaged in spontaneous discussion after a lecture changed their action patterns in a significant number of cases. There was no request for decision here. From the research examined it would be the present reviewer's view that group discussion rather than decision is the decisive factor. The experiments in this section have been limited in goal to immediate concrete results and decision has had the effect of helping the individual see that the immediate group had changed it's views. However every individual is a member of many groups and changes in thinking are open to challenge in many environments. Therefore, in terms of attitudinal changes which contribute to a philosophy of life it would seem that the individual would require the opportunity to examine his present attitudes and new information over a long time span and in different settings before he will adopt new thinking. Decision to change will come almost unconsciously as new ways

of thinking are tested over a number of situations and appear relevant. Some results support this hypothesis. For instance Hill (41) found slight non-significant changes in both group discussion and lecture populations towards less ethnocentricism, more tolerance of ambiguity and greater conviction as to the efficacy of democratic procedures.

The Maier (55,56) and Solem (72) studies lend further support to the Lewin (52) hypothesis that attitude change preliminary to the adoption of new practices are best changed in real life situations. These experiments indicate that the group which was to carry out the solution to the problem came up with a solution which took account of the refinements of feeling involved whereas groups who were not to carry out the solution came up with tidier but less comprehensive solutions. Also Maier (56) found that even where a predetermined "elegant" solution could be given the group which was to carry it out had to rediscover its relevance through high participation and decision. The relationship between role-playing and real life situations has yet to be determined but positing that the results of role-playing are relevant to real life these results support the Lewin (52) theory and the Newberry (Verner, Conceptual Scheme, 85) Scale.

One point which seems to have emerged throughout studies of different types of techniques is that friendship and support are very important in the learning situation and

that if the agent does not create an accepting atmosphere the group will try to supply it for itself specifically, Bair and Hollander (81) found supportive instructors were seen as best instructors by good students; Hill (41) found more friendships were formed in large lecture classes than in small lecture classes (perhaps to compensate for the colder atmosphere); Stone (78) found that negative information alone regarding previous errors does not fixate correct responses with regard to information-learning. Irwin's findings (45) suggest that where critique atmosphere did not allow for positive effect among members more flight time was taken up for positive effect type of communications than where this was accounted for within the critique, and Solomon, Miller and Bezdek (74) note that warmth on the part of the teacher was related to desire to develop intellectual skills in the students, although the relationship of this teacher characteristic to results is not known.

Although the Lewin (52) theory and the Newberry (Verner, Concept Scheme 85) Scale are subject to further testing by better-designed and longer-term experiments they are supported by these results, and on the basis of this review it may be tentatively stated that the Newberry (Verner, Concept Scheme 85) Scale is a practical means for classifying adult education techniques at the present time admitting the reservation that the appropriate use of a technique with a

particular group is subject to the agent's ability to diagnose the educational needs of that group. Techniques which allow for high participant response may enable him to see the participant's thinking and therefore to deliberately select further changes which will enable him to achieve the goal for learning.

Figure 12 reproduces the Newberry Classification Scale with modifications to show the influence of time dimension and participant quality. These modifications are really extra scale considerations which operate on the scale. They are shown as such in Figure 12.

The nature of decision suggests that immediate change is sought though probably necessarily the advance in attitude change is small whereas the nature of information-giving suggests attitude changes will result from the individual's own decision without social pressure and will be longer in coming about but at the same time may be concerned with more overall change in cognitive structure. It may be suggested that the efficacy of all techniques on the scale is being judged by their relevance to attitude change, but it is the Lewin (52) hypothesis that attitudes are a basic element in all learning situations and an element which has previously been neglected. Short term attitude change may occur at the abstract, passive vertex of the scale but this as was pointed out earlier will be relevant to the qualities of the learner

FIGURE 13

A SCALE FOR CLASSIFYING EDUCATIONAL TECHNIQUES ACCORDING TO DEGREE OF ABSTRACTION FROM DIRECT EXPERIENCE OF CONTENT AND DEGREE OF OVERT PARTICIPATION OF THE STUDENT IN THE LEARNING EXPERIENCE

Abstract information long term, individual	1. Abstract	Semi-Abstract	Somewhat removed	Near Concrete	Concrete real life	Concrete information	
A. No participation necessary No provision made for overt participation	lecture types						ATTI LEARNER TUDE PYSICAL
B. Limited participation provided for some	lecture types including questions						INDUCE LEARNING
C. Limited participation provided for necessary for all	Discussion types Buzz groups			info. assimilation			CASBAS CAPA
D. Full (almost) participation provided and necessary for all	practise mental and motor skills						EDOVV EN CE Bl L
E. Full participation necessary for all	Decisions about abstract things				Decision types		ALUES Ll TlES

Abstract information short term — social pressures — concrete information immediate assimilation

and whether he is resistant to the particular attitude learning. Further although the emphasis in this thesis has been placed on attitude changes the scale applies equally to intellectual changes, small immediate intellectual changes can probably be achieved through high interaction and concreteness of subject matter but greater change will come as the result of the effort over time to integrate new concepts into the ongoing structure of the mind.

Hence the scale as presented in Figure 12 shows both the technique placed according to the quality of the learning experience and the extra scale considerations which operate on the technique and which must be considered when determining the possible efficacy of the technique in achieving the learning goal.

III. SUGGESTED DIRECTIONS FOR FUTURE RESEARCH

The present reviewer agrees with the reservations of Dickens and Hefferman (28) and Dietrick (29) that the development and use of research tools is important to the validity of findings on techniques. The present body of research is merely suggestive of the results that may be obtained by designing studies in which all variables are properly controlled under an overall conceptual framework. Although particular areas where a paucity of research exists

will be pointed out in this section the general weaknesses of the research under consideration should be pointed out. The need for a conceptual framework under which studies may be designed so that they are comparable is paramount. These study designs should take into consideration that the study of a technique process is useful only in connection with the goals which may be achieved through this process. Some tool such as the Bales-Interaction Process Analysis Form should be used to compare inter-technique processes, particularly those of similar techniques to help define the uniqueness of each and the particular area of efficacy. The population to be studied should be properly pre-tested for attitudes and skills relevant to the goals of the experiment so that change due to the experimental treatment can be measured. The research should be conducted with adult students in voluntary situations for then only is its value in a democratic society determined. Further there is a need for long term testing of the results of different tecnniques.

With these considerations of the overall situation in mind an attempt will be made to point out areas on the Newberry continuum particularly lacking in research which would provide useful guidelines to the practising adult educator.

There is very little research available on the lecture technique per se. More studies along the lines of

the Trenamen (83) study and the McGuiness, Lana and Smith (60) study (although on a device, the film), which test intra-technique processes in relation to learning goals, are needed. Also studies on different means of concretizing abstract materials would be helpful.

The experiments reviewed here have been more concerned with information-learning than with comprehension or the development of intellectual skills. Further research on lecture and other information techniques virtually untouched by research as yet such as: debate, symposium, dialogue, panel, speech, field trips and result demonstration; is indicated in connection with these goals as well as with information learning.

Under techniques requiring higher participation it has been shown by Brilhart (19) and Hadlock (37) that mental abilities may be developed through certain kinds of group discussion. The Brilhart (19) experiment is an example of a study design in which process is examined in detail and linked to results. There is room for a great deal more work on how mental abilities are developed through participation techniques.

Although some experiments have been concerned with the development of motor abilities, notably Townsend (82), Mason (58) and Draegert (31) and have produced valuable results, many more experiments on the development of different

kinds of motor skills could be undertaken. Only one experiment French (33) has been conducted on role-playing which involves practising new ways of behaving in the attitudinal field. It is suggestive of other experiments which could be undertaken in this area.

Techniques which might seem particularly useful in the teaching of mental skills and which have not been given much research consideration to date are: round table, seminar, colloquim, colloquy, case study and setting up and carrying out of projects and field work under supervision.

In the area of attitude change and adoption of new practices where resistance to learning is present, the Bond (16) and Levine and Butler (51) studies appear to be the only ones of those reported here in which adequate controls were used. Further, only the Bond (16) study investigates the long-term effects of this change. There is room for a great deal of further experimentation into the process and area of effectiveness of permissive group discussion both with and without decision used as a means of consolidating changed thinking.

An overall examination of the scale reveals that there is virtually no research on individual techniques (it is recognized, correspondence techniques were deliberately left out of this thesis). Yet from the Dotson (30) experiment we see that an individual technique can be very useful

in helping the participant see the applicability of information. In terms of techniques concerned with attitude change and the remarks made earlier that these techniques were used in natural settings of participants, it may be that the individual interview is an important technique in this area for it allows the agent to approach the individual in his natural setting and allows the individual to change his ideas regarding the subject at hand at his own pace never letting the threat of new learning become insurmountable. Consequently, individual techniques might be a productive area for research.

Research on techniques from different parts of the scale used in conjunction with each other to achieve the learning goal would prove most useful. A study design which tested two or more techniques used separately and then in conjunction over a time span to achieve a given learning goal might indicate whether techniques used individually or in conjunction were more useful.

IV. SUMMARY

In summary it may be said that the Lewinian (52,53) hypothesis has opened up wide-new areas of responsibility to the perception of educators in designing the educational task. The possibility of categorizing all educational techniques on a scale is dependent upon the assumption that the educational task is a science which can be learned, though those factors which in the past have caused good teaching to be called an art appear in many studies to underlie the validity of any process as a technique for learning. Thus the quality of relationship between agent and student seems paramount in any learning situation.

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