THE ROLE OF TELEVISION IN THE DIFFUSION OF EXTENSION INFORMATION

Thesis for the Degree of M. A.

MICHIGAN STATE UNIVERSITY

Otis Oliver - Padilla

1962

ABSTRACT

THE ROLE OF TELEVISION IN
THE DIFFUSION OF EXTENSION INFORMATION

by Otis Oliver-Padilla

This study is concerned with improving the communication methods of the Puerto Rican Agricultural Extension Service. As a result of the social and economic evolution now occurring on the Island, the Service must provide an increased amount of technical assistance to a large and mobile clientele, and must therefore make its communication methods as efficient as possible.

The study is an outgrowth of the author's experience. He is a native of Puerto Rico who has served for 10 years as an information specialist with the Puerto Rican Agricultural Extension Service, helping to produce its messages in several media, but increasingly in the medium of television. Now on leave from his position, as a candidate for the Master of Arts degree at Michigan State University, he has been studying television production and its relation to the general process of communication.

To help his colleagues in Puerto Rico increase their efficiency as persuasive communicators, he summarizes in this study some of the findings of research concerning the principles and effects of the communication process. He also advances the hypothesis that the Puerto Rican Extension program will benefit from an intensified use of television as

a medium of communication, provided that the televised messages are produced with due regard for the characteristics of the medium and are governed by the research findings previously mentioned. To support this hypothesis, he reviews some of the studies which have been conducted to ascertain the effectiveness of informational and educational television programs, particularly those produced by Extension personnel on the mainland of the United States.

In this present dissertation it must be assumed that what has been ascertained about these television programs and about the communication process on the mainland will be generally confirmed in Puerto Rico, even though some modifications may be indicated as a result of environmental differences. Later, as a candidate for a doctoral degree, the author intends to conduct one or more similar studies within the particular environment of Puerto Rico itself.

The present study begins by explaining the communication problems faced by the Puerto Rican Agricultural Extension Service as a result of the shift towards an urbanized and technological society. The Extension worker is described as a source of persuasive messages which must receive the widest possible dissemination and acceptance by the public which he serves.

The acceptance of these messages depends upon various psychological and sociological factors, which are treated in the next two chapters of the study.

Since the messages originated by the Extensionist are expected to spread well beyond those persons with whom he is in direct communication, the following chapter discusses various processes by which information is diffused throughout a social system.

Next, the author explains the specific role of television in the diffusion of Extension information, showing how audience composition, preferences, and viewing habits help to determine the impact of the medium as an educational device.

Narrowing down to the problems of television production in Puerto Rico, he then reviews some of the factors considered during his production of a series on gardening for the Puerto Rican Agricultural Extension Service.

Despite the apparent success of this series, further studies must be conducted to determine the effectiveness of television as a means of communication for Puerto Rican Extension personnel. The last chapter, therefore, sets up hypotheses for such studies, at least one of which, as previously mentioned, will be tested by the writer as a part of his doctoral program.

An appendix summarizes significant research on the effectiveness of instructional television.

For readers who are interested in broadening their information beyond that presented in this dissertation, a list of reference material has been included at the end of this work under the title, "Literature Cited."

THE ROLE OF TELEVISION IN THE DIFFUSION OF EXTENSION INFORMATION

By

Otis Oliver-Padilla

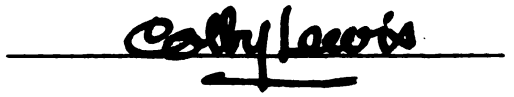
A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Television-Radio

1962



ACKNOWLEDGEMENT

I wish to express my appreciation and thanks to my advisors, Dr. Colby Lewis and Dr. Malcolm S. MacLean, Jr., who guided and assisted me throughout this study.

I also wish to thank Mr. Roberto Huyke, Puerto Rican Extension Director, Mr. Francisco Toro Calder, Associate Extension Editor in Puerto Rico and Mr. Ralph M. Fulghum, Assistant Director of the Division of Information Programs of the United States Department of Agriculture who made available to me valuable sources of information used as reference material in the study.

The greatest debt of gratitude is due my wife and family, whose moral support was an essential factor in the achievement of this task.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF APPENDICES

CHAPTER I

INTRODUCTION

The Puerto Rican Agricultural Extension Service is a state agency working in cooperation with the United States Department of Agriculture. It is a branch of the College of Agriculture of the University of Puerto Rico. Its purpose is similar to that of the United States Cooperative Extension Service as stated in the Smith-Level Act, which established the service "to aid in diffusing among the people of the United States useful and practical information on subjects related to agriculture and home economics and to encourage the application of the same." (1)

The major function of the Extensionist is education. Like other educators, his aim is to produce desirable changes in human behavior - changes in knowledge, attitude, and ability which will help his clients to benefit from new research and to adapt to the changing conditions of society. He is therefore an agent of change.

In Puerto Rico his role as a change agent is difficult and complicated. Because the Island is moving towards an industrialized economy, its Extensionists have themselves been obliged to shift their programs and methods to meet the changing conditions and needs of a mobile society. Not only are they helping to effect the changes that are taking place, but they are also affected by them.

The Extension Service in a Mobile Society

In 1934 when the Service was created, its personnel worked with a

defined rural audience. 71% of the population was located in rural areas and depended on agriculture for a livelihood. Personal relations in the form of visits, meetings, and demonstrations were the common methods used by Extension agents for reaching their clientele. The lack of urbanization, a high rate of illiteracy, and poor mass communication facilities obliged them to depend mainly on oral communication, and their range of influence was limited to the areas where they had physical access.

Their work was restricted to rural people. County agents devoted all their time to helping farmers and 4-H club boys solve farming problems. Home demonstration agents worked exclusively with housewives and 4-H club girls. Farm and home were treated as separate units, and the work of agricultural county agents and home demonstration agents was not co-ordinated. The county program was prepared on a short-term (annual) basis and considered only immediate problems.

In 1962, 28 years later, the Service operates in a different situation. Manufacturing now contributes 21% of the country's income as against agriculture's 14%. (2) An urbanization boom and the demands of industry for skilled workers have helped to raise the standard of living and to reduce illiteracy from 30% to only 14%. The population is now equally distributed between rural and urban areas. There is a trend towards more specialization in all phases of the economy, including agriculture. The farm areas are looking towards scientific and technological improvements to help them maintain their position in the economy.

To accommodate to these changes, the Extensionists have broadened their scope and deepened their perspective. Today, farm and home programs are coordinated, and the family as a whole is receiving the benefits of programs both for short- and long-range projects. No longer concerned only with problems of increasing crop yields, the work of agents begins

when a farmer's seeds are planted and continues until the product is sold in the market, meanwhile taking into account many problems besides those of cultivation. Work with housewives has been extended to cover not only home management practices, but also family relations and many general problems of farm life and administration.

In addition to working with individual persons and families, Extensionists are now involving whole communities in programs of social action. For example, in the "Pilot Rural Development Area of Naranjito", the active participation of the whole community has resulted in many achievements: a rural market has been established to help farmers with the crucial problem of selling their produce; nine 4-H clubs have been organized; three rural acqueducts have been constructed; three rural electrification projects have been completed; and credit for farmers has been made available through the Farmers Home Administration Program. (3)

Moreover, Extension services have been extended to urban areas, where many residents are asking for assistance with home gardening, consumer education, nutrition, family relations, and home management. Retailers are being helped to improve their displays. Garden clubs, home demonstration clubs, 4-H clubs, and other clubs are being organized in the town as well as the country.

Through education and leadership training, the Extension Service is helping people on a county-wide basis to plan and execute programs of benefit to both farm and non-farm residents.

> In the conduction of its program, the Extension Service operates informally in line with the most important local needs and opportunities and with respect to both short-time and long-time matters of concern. It joins with people in helping them to: (1) identify their needs, problems, and opportunities, (2) study their resources, (3) become familiar with specific methods of overcoming problems, (4) analyze solutions to their

> problems, and (5) arrive at the most promising course of action in light of their own desires, resources, and abilities. (1)

Thus the Extension Service provides useful orientation whereby people may learn to help themselves for the welfare of the whole society.

The Need for Efficient Communication

To carry out this expanded program, the Service must find more efficient ways to communicate with the people whom it serves. Personal communication is no longer sufficient to reach the large and heterogeneous audience that is asking for more and more technical assistance.

There is, however, a solution to this problem. Broader use can be made of the press, radio, television, and other channels of mass communication. Thereby Extension workers can multiply their effectiveness, reaching many more people and extending their influence to areas never reached before. No longer need a county agent spend days of travel to carry new information in person to scattered groups of farmers. By using the mass media, he can deliver it simultaneously to an even greater audience, and use the time he saves for other important activities which he would otherwise tend to neglect. As Daniel Lerner observes, "no modern society can function efficiently without a developed system of mass media." (4)

Of these media, the most promising for Extension purposes is television, since its combination of sight, sound, and motion provides a close equivalent to face-to-face demonstrations. In the Island there are now ten television stations with a potential coverage of 184,000 homes. These stations will carry educational programs provided that they have interest and significance for their audiences and that they are well performed and produced. Later chapters of this study will cite some of

the factors which result in successful television productions. Examples will be given of programs produced by Extensionists on the United States mainland which accomplished their purposes, not only by reason of competent production, but also because they demonstrated a knowledge of other factors in the communication process.

For it is not enough for the Extensionist to master the techniques of the medium and construct his message to suit its conditions. He must also construct it in terms of the persons whom he wishes to reach and influence. He must understand their personal reactions to persuasive communications. He must know the social organization and the systems of values and beliefs of the groups towards which his program is directed. He must determine which persons he can attract by his televised message and consider how the message can be diffused by and beyond these persons throughout the broader public which he wishes to educate.

Each of these problems will be discussed in subsequent chapters of this study. Each of them has been subjected to systematic research by students of the communication process. Before considering some of the results of this research, however, it will be helpful to understand the general nature of that process.

The S-M-C-R Model and the Communication Process

The object of a communication is to transfer meaning from a sender to a receiver. But in the process of transfer, this meaning may be altered by a number of factors. These factors have been summarized in what are termed "communication models." A typical model is that constructed by Dr. David Berlo of Michigan State University. It is called the S-M-C-R model because it analyzes the necessary ingredients for communication as a Source, a Message, a Channel, and a Receiver. (5)

To illustrate these factors, let us assume that a hog cholera epidemic has struck a community and that, to combat it, the county agent must communicate with the affected farmers. The source of the communication is the agent. The message consists of his recommendations for controlling the disease. The channel may be personal visits, a television program, a bulletin, or any other means deemed appropriate for reaching and influencing the receivers, who are, of course, the farmers.

A number of interdependent factors will determine the success or failure of the communication act. The elements or contributory ideas of the message must be arranged in an effective order. They must be conveyed in a code or set of symbols appropriate to the medium of communication, (camera shots of physical movements, for example, being required for television, whereas a bulletin conveys its meaning through printed words). The code must also, of course, be intelligible to the receiver; one would not use English, for instance, to reach a Spanish-speaking community.

The intelligibility of the message will also depend upon the communication skills of both the source and the receiver. These skills are the abilities of the source to manipulate the message in such a way that the intended receiver can interpret it correctly without undue effort, or of the receiver to interpret correctly any message that is directed at him.

The act of communication is also affected by the attitudes of the source and the receiver towards each other. An Extensionist who wishes to achieve his goals should be regarded by his clientele as a reliable source of information.

His influence will also be affected by the social cultural context in which the communication occurs. The localities (established residents) of a community have common norms, generated from similar culture, values, and beliefs. A new county agent should expect to undergo an initial period of interaction with the localities before they accept him as part of their social system, only after which can effective communication become possible and the introduction of change become feasible.

Even so, this change may not take place unless the receiver considers the information useful and the desired action beneficial to him.

Communication also depends on the knowledge which source and receiver have about the subject being communicated. The more thoroughly an agent knows his subject, the better can he explain it so that the receiver will interpret it correctly; and the more previous knowledge the receiver has had of the subject, the better can he analyze the information, interpret it, and make an intelligent decision regarding it.

The success of communication is also influenced by the selection of a channel. For some purposes, personal communication may prove most effective; for others, mass media.

In devising the proper treatment for his message, then, the Extensionist should realize that communication depends on many factors; among them are the channel he selects, and the communication skills, attitudes, knowledge, and social cultural context of the source and the receiver.

Reactions of Receivers to Persuasive Messages

In this chapter we have identified the essential factors in the communication process as a source, a message, a channel, and a receiver.

We know that the source in which we are interested is the Puerto Rican Agricultural Extension Service, and we know something about the type of messages which the source is engaged in producing. In later chapters we shall have more to say about the channel - about television as a recommended channel for Extension messages, and about other channels through which these messages may be as broadly diffused as possible.

In the two chapters following this one, we are going to turn our attention to the receiver, considered first as an individual, and next as a member of a social group. We are going to investigate various factors which may influence a receiver's attitude and response to a persuasive message. This is an important topic, for if a communicator is able to predict his receiver's behavior to an intended change, he is in a better position to select messages relevant to him, treat them in a manner and send them through a channel which will secure his favorable response. A knowledge of this topic may make the difference between a successful and an unsuccessful county agent.

CHAPTER II

PERSONALITY FACTORS WHICH INFLUENCE THE RECEPTION OF A PERSUASIVE COMMUNICATION

Agricultural Extensionists are not always successful in their efforts to induce change. The purpose of their message may be commendable and its coverage may be wide. Much time and effort may have been spent to convince people of the benefits of some recommended action, yet the campaign fails to take effect. For example, during the past three years, all of the agricultural agencies in Puerto Rico have been trying their utmost to induce sugar cane farmers to extend their acreage, to plant new, superior varieties of cane, to increase mechanization, and to adopt other practices which will help the Island to fill the quota assigned by the United States Department of Agriculture - yet the farmers resist these changes and continue their exodus to other farming operations. Why has this campaign failed? Why has the communication been ineffectual?

It may be argued that it is always difficult to induce change in rural people. As Lionberger points out, "adherence to tradition in farming is apparent in the persistent use of antiquated farm practices when better ones are available, and in the persistence of one type of farming in an area where another is better suited." (6) But this makes it all the more important for an Extension communicator to carefully analyze the persons whom he is trying to influence so that he may approach them in a manner most likely to persuade them.

He should realize that there are certain personality factors in his clients as individuals which influence their susceptibility or their resistance to change. Such factors have been the subject of extensive research by psychologists and communications experts, some of whose findings will be reported in this chapter. In order to keep the narrative as direct as possible, only the results of the research will be reported. For the conditions under which it was conducted, the reader is referred to the original sources, which are cited at the end of the work.

Topic-Bound and Topic-Free Factors

Some of the factors to be investigated are what Hovland, Janis, and Kelley (1953) (7) have termed "topic-bound." They are concerned, in other words, with how people will react to a specific communication, concerned with a specific topic, originated by a specific source, organized in a specific way to achieve a particular purpose in a particular situation. Others are "topic-free." These are concerned with how susceptible a person is likely to be to any kind of outside persuasive influence, largely irrespective of the particular nature and circumstances of the change which is being urged on him. In analyzing a communication situation, it will often be useful for the Extensionist to consider how his clients are likely to react, not only because of their probable attitude towards his specific proposal, but also by reason of their general tendency to accept or reject any form of change.

The Theory of Cognitive Dissonance

If the proposed change is a fairly radical one, the Extensionist should realize that his proposal of it will create in his clientele varying

degrees of discomfort, as explained in Leon Festinger's "Theory of Cognitive Dissonance" (1957). Whenever a person is confronted with new cognitions, beliefs, and knowledge which are incompatible with his present outlook, he experiences what has variously been termed "cognitive imbalance" or "incongruity" or "dissonance."

> The existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance (inconsistencies) and achieve consonance (consistency).
>
> When dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information which tend to increase the dissonance. (8)

Suppose, for example, that a county agent wants to introduce the practice of artificial insemination in a dairy area, and advocates that a particular farmer adopt this practice in order to increase the production of his cattle by improving his herd. The proposal will cause a state of imbalance in the farmer's mind. To rectify this imbalance, he can move in either of two directions: He can modify his existing beliefs in favor of the recommendation - or he can reject the recommendation, and in so doing, he may avoid any contact with the county agent or any exposure related to the new information; he may even forget his conversation with the agent.

Belief-Disbelief Systems

When a person is confronted with a proposal which causes psychological imbalance, the manner in which he reacts to it may be governed by the degree of rigidity within what Milton Rokeach calls his "belief-disbelief system." Acoording to Rokeach's (1960) (9) book, The Open and Closed Mind, a person who receives new information first screens it for compatibility with his primitive or basic beliefs. For

example, a housewife receives a recommendation about birth control. If her basic beliefs oppose birth control on religious or other grounds, she will reject the recommendation immediately. If, however, the information is not contrary to her basic beliefs, she will proceed to evaluate it in other terms. For instance, is the source reliable? How is the message regarded by those of higher status in her social system? Only if the answers to such questions are favorable will she accept the information as a "non-primitive belief."

The extent and manner in which new information is fitted into a person's belief-disbelief system will depend on the degree to which this system is open or closed. The more closed the system (the more "dogmatic" the person), the more tendency there is to base one's beliefs on irrelevant internal drives or on arbitrary reinforcements from external authority, which are accepted outright without relating them to the inner requirements of logical consistency. The more open the system, the more tendency there is to test one's beliefs by logical requirements, resisting irrelevant motivational or reinforcing pressures. The close-minded person will believe without question the source which he regards as an authority. The open-minded person will evaluate the information on its own merits. Although depending on an authority for the information, he will judge the authority in terms of the accuracy and consistency of the information, and if he finds the information unreliable, he will seek out a more reliable authority.

An awareness of these differences will help an Extension worker to decide whether to approach an individual through an intermediate authority figure, or whether to appeal to him directly with rational arguments.

Extension personnel deal constantly with persons who vary in the degree to which their belief-disbelief systems are open or closed. At the closed end of the continuum are the farmers known as non-adopters. These are rooted to tradition and reluctant to adjust to new ideas and practices. They accept advice only from persons whom they consider as their leaders, usually other farmers of higher status. They are unable to evaluate information on its own merits, depending entirely on the persons whom they look up to as authorities. At the open extreme of the continuum are the innovators. They are the ones who usually seek information from research centers and often surpass the county agent in their knowledge of new farming practices. Moving in from either extreme, there are the non-adopters and the innovators; and between these are the early adopters, early majority and the majority of farmers with whom the Extensionist conducts the bulk of his work.

Other Topic-Free Factors

Besides Rokeach, many other investigators have asked the question, "What are the factors in an individual's personality that predispose him to respond to or resist persuasion, relatively independent of what the topic is or who is doing the persuading?"

Janis and Field (1959) (10) found that persons with strong imaginations and intense emotional empathy are more receptive to change than those deficient in these qualities. Persons of higher intelligence, they found, are more receptive to change than those of lower intelligence. And women are more easily persuaded than men.

Linton and Graham (1959) (11) sought to determine what basic patterns of personality may predispose an individual's susceptibility to influence and found some factors which are not generally taken into con-

sideration by Extensionists when preparing persuasive messages. The persons who are easily persuaded, they found, are those who guide their behavior by the external standards of their environment. They favor conformity, have a limited range of interest and an immature concept of themselves. On the other hand, persons with a high resistance to change are unaffected by the standards of their environment, do not value conformity, possess a mature and strong image of themselves, and enjoy a relatively rich inner life. They tend to be independent without being rebellious. They tend to examine themselves and their role in life to an extent which may include self criticism. They may engage in an internal struggle to free themselves of what they perceive to be hostile, potentially engulfing forces.

According to this research, there seems to be an underlying tendency in people which governs their perceptions, cognitive processes, attitudes, values, and social behav ior, predisposing them either to rely on sources of direction within themselves or to be easily influenced by external factors. Technically speaking, they may be either "inner directed" or "outer directed" in their "self vs. field orientation."

Another factor which affects the degree to which a person can be influenced is his degree of "self-esteem," the value which he places on himself as a result of his past successes or failures. Investigating this factor, Cohen (1959) (12) indicates that persons of high self-esteem are less susceptible to influence from others, and on the contrary are more active in attempting to exert their own influence on others. In general, they are better able to protect themselves against unfavorable reactions from their social group and are less likely to conform to specific expectations which the group may communicate to them.

Fear Arousal Studies

So far, the studies which have been reported have been concerned with people's general reactions to persuasive influence, without reference to the topic or treatment of a specific message. Many other studies, however, have been concerned with message treatment. Of these, two types of studies have been selected to report here since they are particularly pertinent to Extension work. One of these types is concerned with fear arousal. If an Extensionist wants his clients to protect themselves against a potentially harmful situation, is he wise to arouse their fear of the situation, and if so, to what extent?

Suppose that a county agent is interested in eradicating Anthrax disease from the dairy farms of his county. He wants farmers to vaccinate their cattle against this disease, which in addition to killing cattle can also be contracted by humans. He assumes that the more he arouses the farmers' fear of the disease, the more likely they will be to follow his recommendations. However, a study by Janis (1953) (13) suggests that a strong appeal to fear is not always as effective as is generally believed. Janis found that "a high degree of descriptive elaboration of relatively familiar threats is likely to be a cue to manipulative intent and may, therefore, reduce the effectiveness of a communication."

Janis also found that, when a threat does succeed in arousing emotional tension, it may fail to produce the intended change of opinion. When a communication provokes a strong feeling of anxiety, the receiver tends to avoid it by not paying attention to what is being said. He may also try to avoid any further exposure to this information and to forget what he has heard. Occasionally receivers may react to an unpleasant experience by becoming agressive towards the communicator. These

findings support Festinger's theory, previously reported, that people actively avoid situations and information which might increase the dissonance caused by new cognitions which are incompatible with their existing ones.

In another study, Janis and Feshbach (1953) (14) found that, as the amount of fear-arousing material is increased above certain minimal levels, conformity to the communicator's recommendations tends to decrease. The findings suggest that, when persons are exposed to competing communications dealing with the same issue, the use of a strong threat appeal will tend to be less successful than a minimal appeal in producing stable and persistent attitude changes.

Under certain conditions, however, very strong threat appeals may prove to be highly successful. For example, in situations where the communicator has the power to administer severe punishment and the audience has already learned not to ignore his threats, strong fear appeals are likely to induce a high degree of conformity. When prompt action is desired, a strong threat may instigate it, but when permanent and stable changes in attitude and opinion are desired, a minimal threat will be more effective.

Although these studies may be useful to the Extensionist, it should be pointed out that they have been subject to controversy amongst communications researchers, and that more research is needed to test the same variables and other variables under other situations and in other cultures. The same may be said about the next factor to be discussed, although this factor poses some interesting questions.

The Order of Presentation in Persuasive Communication

The persuasive effect of a communication may be altered by the order in which its elements are presented. For example, an Extension worker wants a farmer to change over to a new, superior variety of sugar cane which the farmer does not yet realize he needs. What is the best way to convince him that he needs to make the change - to propose the change first and then explain why it is needed? Or vice versa? Cohen (1957) (15) concludes from his research that the receiver will have a more positive attitude towards the position advocated by the source if the need arousal is presented before the rest of the information.

Another question of order arises when an Extensionist is advocating some measure against which there are opposing arguments. He wishes to acknowledge these arguments as well as his own, but in such a sequence that his own will prevail. Which, then, does he present first - the arguments pro, or con? Janis and Feierabend (1957) (16) confirmed "The Law of Primacy," which states that the pro arguments should be presented first. But in the same year Hovland and Mandel (17) conducted two studies that support the contrary "Law of Recency," which holds that favorable arguments should be presented last so that they are more recent in the receiver's memory. More research is needed, apparently, to clarify the matter.

Summary

During this chapter we have investigated some of the personality factors which may influence an individual's acceptance or rejection of a persuasive message. Some of these factors, such as those involved in the studies of fear arousal and the order of presentation, may be involved with the treatment of a specific communication. Others, the "topic-free

factors," predispose him to accept or resist any proposal for change. The changes proposed by the Extensionist will create a feeling of incongruity in his clients, to the degree that they are at variance with his clients' accepted beliefs. To resolve this incongruity, they can change their beliefs to conform to his recommendation, or they can hold onto their beliefs and resist assimilating any part of the communication. Which course they take may depend upon the degree to which their belief-disbeliefs system is open or closed. To the extent that it is closed, they can be changed less by reasoned arguments than by appeal through persons whom they look to for leadership. Researchers have identified a number of other personality factors which incline a person to be more or less easily persuaded.

To the extent that a communicator is able to predict his receiver's individual reaction to a proposed change, he will be in a better position to select appropriate messages, give them appropriate treatment, and send them through appropriate channels, thereby increasing the likelihood that the receiver will react favorably to the proposal.

But a knowledge of the receiver's personal characteristics is not enough. For human beings cannot live in isolation. Therefore, they organize in various groups, each of which has norms or rules which regulate the behavior of the organization and consequently of its members. To predict an individual's reaction to a proposal for change, therefore, it is necessary to understand the collective mental processes of the groups to which he belongs. This is the subject of the next chapter.

CHAPTER III

SOCIAL GROUPS AND PERSUASIVE COMMUNICATION

The Extension Service directs its messages not only to individuals but also to social groups. Even when its target is a single person, it may find that the best communication path whereby to reach him leads through a group to which he belongs. And when it is desired to predict his reaction to a proposed change, this can often be done by studying the characteristics of his group. For these several reasons it is of value to Extension workers to understand what is known about the influence exerted by social groups upon the acceptance or rejection of a persuasive communication.

Social Groups and Human Behavior

According to Schramm (1954) (18), social groups fall into two major classifications: statistical groups and functional groups. The members of statistical groups are related by a common characteristic or circumstance such as age, sex, education, residential area, or social class. Thus we speak of teenagers, college-educated persons, and so on. Within such groups interaction and communication are not required. There is no particular cohesiveness, nor are there necessarily any imposed patterns of common behavior, which are known technically as "norms." Yet for a county agent who wishes to introduce new practices and ideas to a heterogeneous clientele, it is important to recognize the existence of such groups, because their members tend to react similarly to a persuasive

message. Furthermore, when social action is required, some of these statistical groups may diffuse into functional groups.

Functional groups are those which assemble to work together for some purpose. As defined by Greer (1955) (19), a functional group "is an aggregate of people in a state of functional interdependence. That is to say, they are interdependent upon each other, and all are dependent on the group as a means of fulfilling certain needs." Their members maintain a continuous intercommunication and interaction, as a result of which are generated certain standards of mutual behavior or "collective norms." These norms exert a considerable pressure of conformity upon individuals within the group, especially when the individuals are proud to belong to it and regard separation from it as a form of punishment.

Communication and Social Systems

The Extensionist is concerned with functional groups for several reasons. To begin with, a functional group is a social system, a larger social unit than the individual and therefore one with which it is often more convenient to work. Moreover, a functional group is a communication system. It is through such groups that communication flows and is diffused to the different segments of the population.

Indeed, as was stated by Berlo (1960) (5) in his book, The Process of Communication, social systems are produced by communication. The commonalities, the uniformities of behavior, the interdependence of goals, the pressures to conform to norms, all are produced through communication among group members. Groups are formed when communication flows freely.

But once a social system is formed, it controls communication. In order to maintain its cohesiveness and achieve its objectives, it

determines the communication of its members. It affects how, why, among whom, and with what effects communication occurs. It limits the range of receivers and sources for individuals within it and imposes its norms on their treatment of messages.

This control can be seen at work in the three principal kinds of functional groups: reference groups, secondary groups, and primary groups.

Kinds of Functional Groups

A reference group is one with which a person identifies himself without being an active member thereof. It is one which he takes as a pattern for his behavior. For example, a farmer may operate his business in the way he perceives farmers of high status in the community conducting their operations.

Secondary groups are mainly large organizations, formally organized to achieve a specific goal. One such group is the "Farm Bureau," which exists for the main purpose of protecting farmers by exerting pressures on government for legislation favorable to agriculture. Offices and roles within the group are determined solely by the work to be done. The norms are clearly written rules or laws, violators of which are liable to a well defined set of sanctions. The control in such groups is maintained through formal sanction, with clearly understood rewards and penalties stemming from defined authority and visited upon the person as an incumbent of the office he occupies, not as an individual.

As an integrating force in our society, even within the structure of formal organizations, there exist what are considered the most important social organizations, because of the tremendous influence they exert on human behavior: the primary groups. Usually small and informal, primary groups satisfy the needs of human beings for companionship, friendship,

and affection. Their members have a similar culture and share the same values and beliefs. Through continuous interaction and personal communication, members acquire strong feelings towards their group. To maintain cohesiveness, they generate through concensus informal rules or group norms, which exert tremendous influence. Violations of these norms are sanctioned according to the degree of the offense, and in extreme situations include the complete rejection of an offender from the group.

Group leaders determine what less active members of the group can see or hear or do. Therefore, they are often called "gatekeepers." Furthermore, the primary group often serves as a reinforcing agent for its members' values and beliefs. For example, a farmer is exposed to persuasive information through one of the mass media and is inclined to consider it as good and useful to him. If this initial opinion is supported by his fellow farmers, he feels more certain about it and accepts it as part of his general system of beliefs. His conviction about it has been strengthened or "reinforced."

Like other social systems, primary groups have well defined social structures, although they are based on informal decisions of their members. The groups have their leaders, and also they have members who accept the decisions of the leaders as final and binding. They have "high value members" - that is, members who place a particularly high value on the group, are most active in it, and tend most to conform to its norms.

For Extension communicators it is important to understand the nature and functions of primary groups, since the power to make decisions for the community usually rests with these organizations. An Extension educator who wishes to change or influence others through the community leaders needs to observe carefully the patterns of interaction within and among the small groups of the community.

Research Findings Concerning Group Influence on Communication

The previous section has explained what a county agent should know about the social structure of society in order to function effectively as an introducer of change. He has become acquainted with some of the specialized terms which must be understood in order to interpret correctly the research that has been conducted on social groups and their influence upon communication. The literature in this area is very extensive. From it the author has selected a few findings of particular relevance to Extension work.

When Katz and Lazarsfeld (1955) (20) investigated the influence of primary groups on behavior and attitudes they found considerable evidence that many ostensibly individual opinions and attitudes are primarily social in character and are frequently the norms of the groups to which an individual belongs or wishes to belong. They also found that persons within a group are reluctant to change their common beliefs, values, and sentiments except when, through concensus, the group decides that a change is necessary. Persons who value their group membership highly will particularly resist any communication from an outsider which attempts to change the prevailing opinions, attitudes, and habits which they share with other "high value" members.

Similarly, Kelley and Volkart (1952) (21) suggest that a person who places a high value on his membership is least influenced by communication advocating ideas or practices contrary to the group norms. In addition, they found that the prestige and popularity of a person within a group is positively correlated to his conformity to its norms and his resistance to a counter-norm communication.

A method for proposing change to a group can be derived from a study by Kelley (1952) (22), which indicates that the less the group members perceive that a communication is antagonistic to their group norms, the greater is the opportunity for an initial change, and consequently for further change as a result of subsequent communications. From this one can conclude that, when a drastic change is desired, it should be proposed a little at a time. Gradual exposition of the new practice will avoid an initially strong negative attitude towards it. The imbalance created within the group members will be weak; consequently they will not avoid exposure to subsequent communications; and if these are delivered in the same gradual and subtle manner, they will in time receive all the pertinent information. By these slow stages, one can infer that a more intelligent use of the information will be made and that acceptance of it will be more probable.

Asch (1951) (23) studied the effects of group pressures upon individual judgments. His findings suggest that individual members tend to judge and perceive events in agreement with the judgments and perceptions of the group majority; that in any group there exists a tendency to arrive at conclusions or decisions by unanimity; and that dissident individuals or minorities within the group tend to surrender their opinions and follow the majority decisions.

Similar findings were obtained by Lewin and associates (1943) (24) and Radke and Klisurich (unpublished) (24). These suggest that, when a group decision favors a new idea, the leaders exert enough pressure on dissident individuals to oblige them to accept the majority decision. Also, when some open commitment is made by the leaders of the group, there is a tendency for the members to support it.

Dorwin Cartwright Principles

When Extension people attempt to introduce new practices and ideas to the groups within their clientele, it will be helpful for them to take into consideration the following principles enunciated by Cartwright and discussed by Schramm in his book "The Process and Effects of Mass Communication" (1954) (18):

1. If a group is to be used to bring about attitude change, it is important that the persons who are to be changed and those who are to exert influence for change should have a strong sense of belonging to the same group.

2. A group exerts more influence on attitudes, values, or behaviors which are close to the reason for the group's existence.

3. The more the group means to its members, the more influence it can exert on their attitudes, values, and behavior.

4. The higher the prestige of a member in the eyes of his fellow-members, the more the influence he can exert in the group.

5. The more nearly a group can operate like a team with all members participating in important decisions, the more likely change is to be accomplished without serious tension.

6. The nature of a group is such as to resist deviance on the part of a minority. If an outsider tries to change the attitudes and behavior of a few members of the group in such a way as to make them counter to group norms, he is likely to encounter severe resistance, both from the individuals who value these norms they have accepted, and from other group members who may punish the deviants by loss of status or exclusion from the group.

7. Change in any part of a group is likely to introduce strain and imbalance in the group as a whole. The only smooth change is accomplished by bringing the group along together.

Channels of Communication

The literature which has been cited in this chapter and the preceding one may help Extension workers to understand some of the

reasons why persons and groups accept or reject new ideas and practices, or why they differ in their rate of adopting these ideas and practices. Knowing how the reaction to a persuasive message is influenced by personality and social characteristics, they should be able to make their messages more relevant to their clientele and therefore more likely to accomplish their purposes.

But before a message can accomplish its purpose, it must reach its intended audience; and to do this, it must be directed through appropriate channels of communication. In diffusing their programs, Extension workers can choose between two systems of communication: personal communication or mass communication. The next chapter will discuss important principles related to the use of these systems, with the aim of helping the reader to decide whether one or the other system, or both, should be used to accomplish a particular objective.

CHAPTER IV

COMMUNICATION SYSTEMS AND THE DIFFUSION OF INFORMATION

This chapter aims to provide the county agent with knowledge which will help him to select appropriate channels for the dissemination of agricultural information. It begins by presenting factual data about the diffusion process, paying particular attention to the "two-step flow hypothesis." It then proceeds to focus more specifically upon the subject of agricultural information, furnishing data about the main sources which farmers consult for new ideas, and discussing the role played by the different channels of communication in diffusing information to them.

The Two-Step Flow Hypothesis

When an Extensionist releases information through the mass media, he should remember that it is likely to be extended beyond the media by word of mouth. Frequently one person tells another what he has learned from the media, giving the message what might be termed a secondary exposure.

Such person-to-person communication is important. When Katz and Lazarsfeld (1955) (20) asked 800 women of Decatour, Illinois, what influenced their decisions in marketing, public affairs, movie going, and fashions, they found the determinant to be interpersonal relations developed through oral communication. And when Lazarsfeld, Berelson, and Gaudet (1948) (25) studied what influenced voters in the 1940 presidential

elections, they found that "personal contacts appear to have been . . . more effective than mass media in influencing voting decisions."

When a message originates in a mass medium, therefore, its impact may be increased through subsequent person-to-person communication. Particularly will this be true if the message is designed originally to impress the more influential members of the social system which the Extensionist wishes to reach - the persons who are called "influentials," "opinion leaders," and sometimes "gatekeepers," because they are in a position to determine whether or not the information will be passed on to the other members of their group.

According to the "two-step flow hypothesis" of Lazarsfeld, Berelson, and Gaudet (1948) (25), ideas often flow (step one) from the mass media to the opinion leaders, and then (step two) from them to the less active sectors of the population.

Opinion leaders are likely to be more exposed to the mass media than those whom they influence. Such were the findings of Katz and Lazarsfeld (1955) (20) in their Decatour study. The influentials in that community exceeded other members of their group in the time they devoted to the media, and particularly to content therein which was closely associated with their sphere of influence.

Who are these leaders and where are they located? In the Decatour study they were found on every status level of the community, generally among the more gregarious people of their groups. They were not on a rung above the persons whom they influenced; rather, they exerted their influence "horizontally" on persons of their own social-economic level, who were, incidentally, as interested or almost as interested in the subject-matter concerned as those who influenced them.

A closer look at the nature of opinion leaders was taken by Merton (1949) (26) in his study of interpersonal influence on communication in a small Eastern community. To locate the influentials, Merton asked residents to name the persons to whom they turned for advice when making personal decisions. Persons who were named by four or more residents constituted the influentials whom he used in the study. These, he discovered, could not be classified as a single group, standing apart from the rest of the community. They were scattered throughout the community and were of different types. Two types which were particularly evident he distinguished as "local" and "cosmopolitan." Local leaders were more likely to be native sons, while cosmopolitan leaders were relative newcomers. Local leaders were concerned with knowing a large number of townspeople, while cosmopolitan leaders were more restrictive in their associations, tending to belong to organizations which represented special skills and interests, such as professional societies. Both types of leaders spent more time with the mass media than did the average person in the community, but the local leaders focused more on local events or on subjects of general interest, whereas the cosmopolitan leaders were more interested in information about events outside of the community. The local leaders seemed to exert their influence in a variety of areas, whereas the cosmopolitan leaders seemed to restrict their influence to fields such as national or international politics in which they were consulted as experts.

Merton's findings also suggest the two-step flow hypothesis, as does the study by Larsen and Hill (1954) (27) of the ways in which news flows to various segments of the population. To summarize this hypothesis and the literature related to it, oral and mass communication are linked

in the diffusion process. Information generated in the mass media is received by some individuals who re-transmit it personally to others who would not otherwise be exposed to it. These opinion leaders, influentials, or gatekeepers have to be taken into account in any attempt to influence people by means of the mass media. Furthermore, the findings suggest that people look for advice or additional information within their own groups, which indicates that opinion leaders are distributed through all strata of the population. These leaders are more exposed to mass communication than are the other members of their social systems.

While this general explanation of the diffusion process should be helpful to Extension communicators, it needs to be supplemented with further data on the special processes by which information can be channeled to reach an agricultural audience.

Agricultural Information and the Diffusion Process

The role of Extensionists as communicators is to expedite the flow of information from research centers such as the Agricultural Experiment Stations to farmers who may be able to use this information to increase their yields. To do this, Extensionists should use a channel which connects them to the greatest number of farmers who need the information. But which channel should they use - oral or mass communication? It will be easier to decide this question if one knows as much as possible about the diffusion process and about the theories which describe what happens as this process unfolds.

The theory of Beal and Bohlen (1957) (28) attributes to the diffusion process the following five stages:

1. Awareness: The person (farmer) first becomes aware of a new practice.

2. Interest: He is now receptive and may even seek information about it.

3. Evaluation: He mentally estimates its worth to him.

4. Trial: Satisfied that it might work for him, he tries it out.

5. Acceptance or adoption: This follows if the practice results in sufficient economic rewards or other types of personal or social satisfaction.

During each of these stages the farmer is influenced by information which he receives from various sources. Beal and Bohlen conducted a study to determine which of these sources were the most common and how influential each of them were at a particular stage of the process. Their findings suggest that the most common sources during the awareness stage were mass media; during the interest stage, again mass media, followed by government agencies; during the evaluation stage, neighbors and friends; and during the trial stage, (in ranking order) neighbors, friends, government agencies, mass media, and salesmen. (These findings are summarized in tabular form as Appendix B of this thesis.)

Identical results were obtained in another study by Beal (1958) (29) and in a replication of the Beal and Bohlen study by Coop, Sill, and Brown (1958) (30), the only difference in this latter study being that, in the interest stage, the farmers interviewed ranked face-to-face contacts as their most important source, followed by mass communication.

In general, the research shows that, in the awareness and interest stages, mass media appeared to be the most important sources, while in the trial and adoption stages, the greatest influence was personal communication. This suggests that a county agent will be more successful if,

during the initial stages of a planned change, he makes liberal use of mass media for the rapid spread of information, supplementing this with personal communication. Then, when awareness and interest have been developed, he should increase his personal communication to promote trial and adoption, using the mass media in a supplementary role. After adoption, he should continue to supply information both through personal and mass media channels in order to make the change permanent, for if he does not, the farmer will tend to revert to his original practice.

Rate of Adoption and the Diffusion Process

As already mentioned in a previous chapter, farmers vary in their rate of adopting new practices and ideas. Researchers have classified them in five categories: (1) innovators, (2) early adopters, (3) early majority, (4) majority, and (5) non-adopters. Each of these plays a different role in the diffusion process.

Innovators are the farmers who adopt new ideas first. They are characterized by higher education, larger farms, greater incomes, more social status, and wider travel than the average farmer. They are experimenters, always trying out new things. They are active and influential, not only in their community, but often beyond its boundaries. They usually belong to formal organizations and have many informal contacts both inside and outside their community; therefore they have more potential sources of information than other farmers. Beal (1958) (29) found that most of the innovators' new ideas come from government agencies or mass media. They seek advice from other farmers, but primarily from those who are progressive thinkers like themselves. According to Lionberger (1960) (6) innovators perform an important function in the diffusion process. By assuming risks that others are

not willing to take, they provide the local trial which is necessary to legitimize a new idea or practice in the eyes of other farmers who are more skeptical or more cautious.

Next come the early adopters. Compared to the late adopters, they are usually younger and have more schooling. They participate in formal activities of the community and in agricultural cooperatives and government agency programs. They furnish many formal leaders (elected officers) for the community. They are usually considered as the "influentials" of the community and are sought out for their advice. Beal (1958) (29) found that at the awareness and interest stages, they were influenced primarily by mass communication; at the trial stage, by government and commercial sources; and in the adoption process, by agency sources and mass media. The influence of friends and neighbors was less important to them than to the late adopters.

In the third category, known as the early majority, are those who adopt new ideas and practices earlier than the average farmer, but are close to average in many other respects. They are a little above the average social and economic status. In formal groups they are less active than the early adopters, but more active than the late adopters. Their leadership is usually informal rather than by elected office. They associate mainly with members of their own community and place a high value on the opinions of neighbors and friends. Although influenced by the norms of the groups in which they are active members, they are usually receptive to change. Like the innovators and early adopters they are heavy users of the mass media. They are influential in their social groups and are sought out for their advice. Because they are normally the ones to receive new information and pass it on to less active farmers, they are considered key communicators. As such, according to

Lionberger (1960) (6), "they are in a position to select what they transmit, to shade it with their own interpretations, and to incorporate either positive or negative recommendations." In other words, they are gatekeepers, controlling the information which reaches the less active farmers in their social groups.

The next category, termed the majority, are older and less well educated than farmers in the early majority. They participate less in formal groups, belong to fewer organizations, are less active in organizational work, and hold fewer positions of leadership. Although receptive to new ideas, they are too mated to their social systems to seek new ideas actively. Most of their new information comes from other persons, usually from the opinion leaders. They are inactive in government programs and remain aloof from the change agencies as information sources.

The last category, the non-adopters, are the oldest and least educated. They participate least in groups, in formal organizations, in farm cooperatives, and in government programs. Their mental rigidity does not allow them to accept changes in their traditions and customs.

Other Factors Influencing the Adoption of New Ideas and Practices

What causes these differences in the rate of accepting new ideas and practices? As indicated in a previous chapter, some individuals seem more predisposed to accept change by reason of factors in their personalities - but there are other factors, as far as farmers are concerned. These, as revealed by research, are: (1) the extent of the farmer's education, (2) the cost of the new practice, (3) the area where he lives, (4) the amount of his farming experience, and (5) the nature and number of the communication channels to which he is exposed.

The findings of Young and Marsh (1950, 1955) (31) suggest that the higher the education level of farmers, the greater their rate of acceptance of new practices. The higher their economic level, the more frequent their adoption of new practices. Farmers who live in areas where farms are larger and are served by modern facilities such as electricity and good roads have a higher rate of adoption than those in isolated and more primitive communities. The findings also suggest that the farmers with more education and higher incomes and who live in high-adoption neighborhoods use a greater number of information sources, among which the mass media are very popular. Similar findings were obtained by Dickerson (1955) (32), by Baker (1955) (33) and by Anderson (1955) (34).

Conclusion

The literature reviewed in this chapter has shown that both personal and mass communication are important in the diffusion of new agricultural ideas and practices, and that each has its own special role in this process. Mass communication is especially influential in the awareness and interest-arousing stages of the process, and it is particularly appropriate for reaching the opinion leaders and the early adopters who diffuse information by word of mouth to other members of the community and set examples for them to follow. Although personal communication is still a major force in securing the trial and adoption of new recommendations, mass communication is a much more common and influential source of information for farmers than some county agents seem to believe. Considering this, and also how much more efficient mass communication can make the work of these agents, it merits more use by

the Puerto Rican Agricultural Extension Service than is being made of it at present.

This chapter has discussed the potentialities of the mass media in general. The next chapter will be devoted entirely to presenting factual information about the newest mass communication channel, television, as an effective medium for information and education.

CHAPTER V

THE EFFECTIVENESS OF TELEVISION AS A MEANS FOR DIFFUSING FARM AND HOME INFORMATION

Is television an effective means for diffusing farm and home information? This has been a controversial question during recent years, both in Puerto Rico and on the mainland of the United States.

Some Extension educators resist making any extensive use of television. They believe that farmers regard it primarily as a means of entertainment rather than as a source of information. They argue that television production is too expensive, that it requires special talents, and that it demands too much time for program preparation if its messages are to have sufficient impact to gain and maintain an audience. Messages designed for mass audiences, they claim, may have to be too superficial to accomplish thorough results. Because the audience for a broadcast message is not a captive one, but must be won against competition from other programs and pursuits, the proper receivers for the Extension worker's message may not be watching when his broadcast is made--and if they are, they may be too distracted by other occurrences in their homes to pay proper attention to the message and comprehend it accurately.

Other Extension educators, however, use television more intensively. Because of its triple appeal to sight and sound and motion, they regard it as a highly effective means for disseminating Extension

information. Furthermore, they claim, it increases the reputation of the Extension Service as an educational authority and creates better understanding between rural and urban people.

The author of this dissertation is admittedly allied with the advocates of television. As an information specialist of the Puerto Rican Agricultural Extension Service, he strongly believes that, by intensifying its use of television the Service can reach many more people with no more effort, extending its range of influence to areas never reached before. Especially today, when the Service has obligations to urban as well as rural areas, he considers television to be an excellent method for informing consumers about farming and farm life, housewives about homemaking practices, and part-time farmers and suburban residents about desirable improvements to their homes and gardens.

This confidence in television must, however, be justified and qualified; and the claims of the opposing point of view must be investigated, not merely in the light of personal experience, but with the support of scientific research.

Is Television Regarded as a Source of Information?

Perhaps the most basic question to raise is this: Do the targets for Extension messages regard television as a useful source of information? Several research studies indicate that they do.

Bertrand and Bates (1958) (35) studied the viewing habits of rural men and women in Louisiana, by random sampling of areas within a 30 mile radius of television stations. Of the people interviewed, three fifths said that they regularly viewed agricultural and homemaking programs and that television was their preferred medium for farm news and market reports. The study shows that 82% of the sample owned television sets.

In 1953 (when the ownership of television receivers was not as general as it is today), Axinn studied the television viewing habits of farm operators in Delaware and found that almost 40% of them owned television receivers. Of these, 87% were interested in a televised farm program presented by the University of Delaware. (36)

Crile, Reist, and Tait (1955) (37) conducted a study in Lancaster and Lebanon counties, Pennsylvania, to find out to what extent purely rural residents were viewing the Extension television programs being broadcast in those counties. Of those having television sets, 25% of the men and 45% of the women had seen the programs. A small percentage of those without sets watched away from home.

Williams (1956) (38) studied the audience for "Across the Fence," a television program of the Vermont Extension Service. Of those interviewed, the program had been watched by 53% of the farm households, 42% of the rural non-farm households, and 37% of the urban households. In farm families, the number of men and women was about equal. From the results of this survey, the Radio and Television Manufacturers Association conservatively estimated the audience of this program to be 50,000 people. Similar results were obtained by Sloan (1955) (39) when he investigated the reception in Caldwel County, Texas, of "Town and Country," a program presented by the Agricultural Extension Service five days a week.

Can Television Teach?

The findings just cited show that Extension television programs can find a sufficient audience --at least under certain conditions. What these conditions are must, of course, be investigated. One condition, presumably, is that the audience should consider a program to

be worthwhile. It is logical to assume that an Extension program will be considered worthwhile if its audience is able to learn something useful from it. The question arises, therefore: How effective is television as a teaching device?

Many researchers who have raised this question have studied, not the ordinary form of television broadcast to a random audience, but rather instructional television, which is transmitted to a specific audience such as a class of students who are taking a televised course for credit. Sometimes this course is broadcast to the students' homes; sometimes it is transmitted through closed circuit. In either case, as shown by Kumata (1956) (40) in his inventory of instructional television research, television can be as effective as class room instruction for teaching a wide variety of subjects. Crile (1955) (41) and Barrow and Westley (1958) (42) cite various courses successfully televised for credit at university and high school levels. They also describe findings by the Training Devices Centers of the U. S. Navy that a television program can be at least as effective in conveying factual information as other means of instruction.[1]

Although the Extension Service may use instructional television for training leaders or reaching other special groups, it has so far made much more use of television as a mass medium for reaching a widely dispersed and heterogeneous audience. Several studies indicate that this use also may be effective.

---

[1] For additional information about the effectiveness of instructional television the reader is referred to Appendix A. It contains valuable empirical data about how television can best be utilized in advancing educational goals.

Wilson and Moe (1951) (43) investigated the effectiveness of "Let's Make a Dress," a television program series broadcast to the metropolitan area of Washington, D.C. The results show that a high percentage of those interviewed followed the televised demonstrations. That these demonstrations, supplemented by a bulletin on the same subject, resulted in a real learning is evidenced by the extensive use that the viewers made of their new knowledge during a five-week period immediately following the programs. Seven in eight of the 229 women who viewed one or more programs said that they had learned something new about dressmaking from the television demonstrations.

Gauger (1953) (44), in Story County, Iowa, studied the results of four programs called "One Hundred Bushels of Corn a Reality", presented by the Extension Service. The findings indicate that television is considered an effective way of reaching farmers with new ideas on soils, fertilizers, and crop rotation. A large percentage of the farmers interviewed thought the television programs were usually better than regular meetings for getting information about farm problems.

In their previously mentioned survey in Lancaster and Lebanon counties Crile, Reist, and Tait (1955) (45) found that more than two thirds of both men and women considered television as a very useful channel for receiving Extension information. 10% of the men and 5% of the women who watched the Extension program requested additional information or made contact with the County Extension Office. Of these, all but one had previously had contact with the office.

From their study of a series on tailoring a coat, Pollack and Melache (1954) (46), concluded that people watch Extension programs in order to learn. Most of the women interviewed said that they watched

the programs in order to learn how to sew and tailor. All expressed interest in seeing another clothing series on television.

Viewing Habits and Preferences of the Extension Television Programs Audience

Television, then, is regarded by farmers as a source of information. And television can teach. For Extension personnel, therefore, it is a potentially useful tool. The word "potentially" is used advisedly, for in order to fulfill its potentialities, it must be properly used. Proper use requires that it be skillfully produced, that it present information relevant to the needs and interests of the intended audience, and that this information reach the audience at a time when the audience can pay attention to it. In order to produce an effective television program, the Extensionist needs a thorough knowledge of the viewing habits and subject-matter preferences of his clientele.

A number of researchers have studied the viewing habits and preferences of Extension program audiences on the United States mainland. Some of their results will be quoted as examples of the need to determine these factors, with full awareness that studies conducted in Puerto Rico might produce different results. In reporting the conclusions of these researchers, subject matter preferences and preferred viewing times will be presented together, since most of the studies have considered both of these topics and since, in some instances, they are closely related, a certain day or time of day being preferred for reception of a certain type of subject matter.

In his previously mentioned survey of Caldwell County, Sloan (1956) (39) found that farmers preferred Friday and Saturday for Extension television programs. When asked what hours were best for Extention programs, 50% of the respondents suggested the noon hours, and

26% the hours between five and six in the afternoon. The other 24% mentioned morning and early afternoon. Landscaping was the subject wanted most often by urban people, while insect control was by far the most popular subject mentioned by rural residents.

Merrill (1955) (46), in his analysis of "Town and Country," telecast by the Michigan State University station, found that, although both male farmers and female homemakers watched the program, they did so for different sections of it. The homemaking feature, as might be expected, was popular with homemakers but disliked by farmers, whereas the market reports were liked by farmers but only slightly liked by the women. For farmers, the most convenient time for viewing the program was 12:30 to 1:00 P.M., and for rural housewives, 12:45 to 1:15 P.M. As to production and program content, respondents suggested that a regular master of ceremonies of professional calibre be secured to carry the program, removing this responsibility from the county agents, who would then be treated as guests. The respondents also wanted their performers to be well-dressed, businesslike, enthusiastic as well as friendly. One of the most important findings of the study was that the most popular farm feature on the program lost the interest of the farm men after eight minutes, and the most popular homemaking feature lost the interest of the homemakers after five minutes. The study suggests that separate programs should be provided for farm men and farm women, and that, in order to maintain interest, program segments should either be shortened or strengthened with more interest-provoking techniques and appeals.

In his study of the mass communication habits of Delaware farmers (previously mentioned in this chapter), Axinn (1953) (36) found that the

persons interviewed favored Sunday as their best viewing day, one half hour as the best program length, and from noon to 2:00 P.M. as the best time of day for Extension television programs.

Bertrand and Bates (1958) (35), studying television viewing habits and preferences in rural Louisiana, found that men were especially interested in programs dealing with farm enterprises, while women favored programs about cooking and food preservation. Their results also imply that it is advisable to present programs for farmers apart from those directed to homemakers.

Conclusion

The research reported in this chapter has established that television is regarded by farm people as a reliable source of information and that they use it to improve their farm production and homemaking skills and, consequently, their standards of living. The programs they use, however, are those which are relevant to their needs and interests and are scheduled at times when they can pay attention to them. Therefore, it is important for Extension workers using the medium to know their clients' viewing habits and subject-matter preferences. To determine the habits and preferences of Puerto Rican Extension audiences will require research, recommendations for which will be proposed in the last chapter of this thesis.

In 1958 the author produced a gardening series for the Puerto Rican Extension television audience. The results of this series were encouraging enough to show the potentialities of television as an Extension tool. So far, these potentialities are practically unexploited in Puerto Rico. More programs are needed to inform consumers about farming and farm life, to inform farmers about new technology, to

inform housewives about new practices in home economics, and to inform part-time farmers and suburban residents about various matters of house and garden. Were the Puerto Rican county agents to focus their attention on television and integrate it into the total county program, combining it with bulletins, press releases, and personal contacts, their effectiveness would be tremendously improved.

It is true, however, that they cannot produce effective television programs without some degree of special knowledge. In order to provide them with some orientation to the basic techniques of television production, the next chapter describes the problems faced by the producer of "Your Garden," a television program series started in 1958, which accomplished one of the main goals of the Agricultural Extension Service -- the diffusion of new practices in the field of ornamental horticulture, and the acceptance and application of these practices by the receivers.

CHAPTER VI

PROBLEMS IN THE PRODUCTION OF EXTENSION TELEVISION PROGRAMS AS EXEMPLIFIED BY "YOUR GARDEN"

In August, 1957, the Agricultural Extension Service was requested by the government station, WIPR-TV, to produce a television program series devoted to Extension information. The result was "Your Garden." Although originally planned for only thirteen weekly programs, this series was so successful that it was extended to one hundred and four weeks. Having been kinescoped (recorded on film) during its original broadcasts, the series has been shown since on other stations and is still being transmitted by one commercial station.

Having accepted the invitation of WIPR-TV, the Extension service assigned responsibility for producing the programs to the Radio and Television Section of its Information Office. Six months were devoted to planning the production before the first broadcast.

Selection of Subject Matter

The first step was to select the subject matter. To do this, a staff meeting of the Information Office was held. Many possible subject fields were considered and finally narrowed down to four: a farm series, a consumers' education series, a 4-H Club series, or a gardening series. Each of these represented an important aspect of Extension work. Which

one should be selected? Which would have the most impact? Which would reach the largest audience?

Before deciding, a careful analysis was made of the potential audience and its needs for information. This revealed that there were 150,000 television sets in the urban area as against 20,000 in rural areas. 125,000 were located in the northern part of the Island where the station signal was clear.

After weighing the pros and cons of the four alternatives, the gardening subject was finally chosen, primarily for two reasons: (1) Home gardening was an interest which urban and rural residents shared in common and with which many of them had been asking for technical assistance. (2) The Tourist Bureau was developing a campaign for the ornamentation of the Capital and its suburbs.

The objectives of the show, then, were to assist urban and rural residents in technical problems related to home gardening; to make the general public conscious of the need to have clean and well ornamented cities in the Island; and to train leaders, who in turn would be able to train other people in home gardening practices.

Home gardening, however, was still too broad a subject to be successfully treated in thirteen programs. To narrow down the topic, therefore, the producer called a meeting of the subject matter specialist, the Extension editor, and the county agents of the metropolitan area. From this meeting came a decision to plan a pilot series of thirteen weeks around the specific subject of lawn propagation and culture, with program segments on grass varieties, propagation of the lawn, care of the lawn, fertilizing, and control of weeds, insects, and diseases.

As the reader will have noticed, much time and effort was given to these initial stages of production. The cue for successful Extension programs is careful planning. Concerning this planning process, Speece, Skelsey, and Gapen (1953) (47), television specialists of the United States Department of Agriculture, reached the following conclusions:

> Successful television programs do not just happen. They are the result of a careful step-by-step process involving many persons skilled in various arts and sciences.
>
> As the producer plans his television program he must keep two thoughts in mind: Who are the people I am trying to reach and what do I want them to do? To some degree, the producer can select the specific audience he wishes to reach. Time of day is the most important factor in determining the type of audience.
>
> The subject-matter specialists through their contacts with the field are aware of current problems and projects in the field of agriculture, and the producer will be wise to consult them for program ideas.
>
> The subject matter, of course, should be timely, of interest to the audience, and affect the audience in some way. It should be challenging, something that touches directly on the problem, and preferably furnishes the solution to that problem.

Gathering of Specific Content Information

In the author's experience, the second stage of planning the production is the gathering of specific content information. This requires close coordination with content specialists. To facilitate the coordination, the specialist on ornamental horticulture for "Your Garden" was relieved of his regular duties and attached on a full time basis to the program. Through his efforts, contacts were established with technicians of the Agricultural Experiment Station, who also supplied information for the programs. This coordination paid dividends. Without it, the information could not have been assembled on time.

Time in this case does not mean time for the first broadcast, but time well in advance of this to permit arrangements with nurseries for the supply of propagation material, to permit the preparation of bulletins and leaflets to offer to viewers of the programs, and to permit the writing and distribution of promotional material, which, for "Your Garden," started the arousing of public interest in the series three weeks before it went on the air.

As James P. Veeder (1953) (48), information specialist of the Cornell University Extension Service, recommends:

> The first step in producing a TV show is to select a subject matter field, for example, foods, housing, child care, landscaping, and gardening. From this broad field, select a specific phase of that subject as a topic for the television program.
>
> Topics for TV shows should be definite and concrete rather than vague and all inclusive. Thorough treatment of the topic is preferable to the "once over lightly" way of presenting information.
>
> Not only is the subject important, but the topic must be capable of visual presentation.
>
> Topics must be timely. Topics are of the greatest interest to the viewer during the particular time the commodity is plentiful or at a logical time a job should be done.

Format and Organization of the Program

While the content information is being collected, thought must be given to the manner in which this information will be presented in the programs. From this there emerges the format, a general plan or outline which designates the major divisions of the program, the order in which they will occur, and how much time will be alloted to each. The final format of "Your Garden" was as follows:

Opening . . . . . 30 seconds

Answering audience questions (to promote audience participation) . . . . . 5 minutes

Demonstration ("how to do it") . . . . . 13 minutes

Research news (summaries of research on ornamental horticulture) . . . . . 5 minutes

Guest interview, or film on some outstanding project . . . . . 4 minutes

Closing . . . . . 30 seconds

As will be noted from the above, the format specifies what kind of audience interests are to be served during the program. It establishes a variety of approaches to the subject matter so that audience attention will be periodically refreshed. It provides a standardized (and presumably tried and effective) form into which the material for each successive program can be fitted without the necessity of creating a new form every week.

The selection of a format is limited by the available budget (which for educational programs is usually low). This limitation can be overcome in large measure by intelligent use of the available resources, including the facilities of research centers and commercial nurseries for supplying technical equipment and propagation material, and the facilities of the television station such as art work, settings, and properties.

Help in planning Extension program formats can be obtained from the handbook, Television for You by Tomkin and Skelsey, who advise:

> For practical purposes there are three types of programs that Extension Service has been doing on television: (1) The method demonstration, (2) The illustrated report, (3) The television discussion.
>
> There is also considerable use of these types in combination, either two or all three. Your method demonstration will be closeup television, short, to the point,

> and stripped of all distractions. The viewer, through the camera lens, will be within inches of what you do, closer sometimes to your own demonstration than you are. This is one great advantage that the television demonstrations have over the same demonstration at an extension meeting.
>
> Your illustrative report offers much latitude in the presentation of extension information by television. It is concerned with results, conditions, and activities in farm, home, and community life in your area. Many illustrations you can use on the illustrated-report type of program will be the real thing: Actual comparisons of plants in result demonstrations, examples of insect damage, a sod sample of a recommended kind of grass, extra-fine specimens of local grown fruits and vegetables, home firefighting equipment, and many others.
>
> The number-one ingredient of your discussion-type program on television is a guest (or guests) who is personable to the extent that he can hold the interest of the viewer without demonstrations, actions, or a large number of visual aids.

Name of the Program

The name of the program should be something that people recognize and identify with it each time the program goes on the air. It should be related to the content of the program or to its sponsoring agency. It should serve as a guide to what to expect in the program which will benefit the viewer. The name "Your Garden" was chosen because it created the image of something beautiful and attractive.

Opening and Closing of the Program

A program opening involves a careful selection of a musical theme and an appealing visual treatment. Since it is the first impression that the viewer has of the program, it will, in some instances, make the difference between attracting a large audience or not. The closing is usually guided by the same principles. It is the viewer's last impression, and if well motivated, will influence him to become a permanent viewer of the series.

In the case of "Your Garden," the musical theme was selected by the Music Director of WIPR-TV with the approval of the producer.

The Talent

In the planning of Extension television programs, the selection and training of the talent is of primary importance. Although there is no sure way of predetermining which individual will give the best performance, it helps to consider subject matter knowledge, experience in demonstrating, personality, and knowledge of the audience. After a little experience, subject matter specialists and county agents are capable of giving good performances and with infinitely more authority than professional television actors. However, they should be chosen with a view to such personality characteristics as dynamism, presence of mind, wit, sincerity, and the ability to memorize. Their availability for rehearsals is also important.

For "Your Garden" three persons were normally used as talent: a subject matter specialist in charge of demonstrations and technical information, a commentator for the research news section, and a master of ceremonies to tie the various segments together and guide the subject matter specialist through his portions of the script. These persons were recruited either from the Information Office or from the Horticulture and Forestry divisions.

Visuals

A major criticism of Extension television programs is that they are good radio but poor television. Too many producers are satisfied to rely on a radio script, supported rather weakly by visuals as appendages rather than as fundamental ingredients in the communication.

The way in which visuals are used will affect the pace of the performance. Only excellent ones can serve to create attention and interest and to clarify the audience's understanding of the subject matter.

In "Your Garden" most of the visualization was "live." All the propagation material and equipment was real. Slides, photographs, or film strips were used only when it was not possible to bring a rare variety to the studio or when a small object had to be enlarged. Films were used when demonstrations were made in the field, such as spraying weed killers or applying fertilizers.

Results Justify the Effort

The producer of an Extension television program has other concerns. He supervises the script writing, rehearsals, staging, lighting, and directing. He is concerned with advance promotion and with subsequent program ratings and program evaluation. Throughout the production he maintains harmony among the crew members and good relations with the station officials and the general public.

Obviously, a county agent will need special training for these tasks - and they get it. The broadcasting specialists of the Extension Service are constantly training them in the use of radio and television. Furthermore, when the agents first plan to use television, at least part of the television staff moves its headquarters to their county and helps them in all phases of production until their program is well established and they are able to carry on alone with a minimum of difficulty. At present, some county agents are in the United States, receiving training in mass communication, including television.

That such training is worthwhile is indicated by the achievements of "Your Garden." According to ratings, this was the second most popular program presented by WIPR-TV. For each of its live broadcasts, the audience was estimated by a rating agency as 15,000 - more people than could be reached in one year by the combined personal contacts of three county agents. Some of these persons viewed the program in meetings, organized throughout the Island under the leadership of home demonstration and county agents.

As a direct result of the series, twelve garden clubs were organized on the Island. These clubs distributed more than 25,000 gardening publications. They conducted campaigns for the ornamentation of plazas, public schools, and parks, and contests for the best home garden in their municipalities. The annual report of the Extension Service for 1959-1960 acknowledges that the home gardening project was sustained mainly by the "Your Garden" series, and that the ornamentation projects conducted by home demonstration club members were increased 20% as a result of the program. The program stimulated more than 10,000 letters requesting information about gardening from people who were using Extension services for the first time.

Summary

Television, properly applied and produced, is an excellent channel for the diffusion of Extension information. It uses the same skills that Extensionists employ in the everyday performance of their jobs. It is efficient, because it makes possible the concentration in one place of the best demonstration equipment and allows specialists to reach more people with a single effort, covering the majority rather than a fraction of the residents of a given area.

However, to make the most effective use of television, the Puerto Rican Extension workers need more factual information, which should be derived from a well planned and organized research program. At the moment, programs tend to follow the patterns of those produced on the United States mainland, and their adaptation to the Puerto Rican situation is a matter of trial and error. For more reliable results, factual answers are needed to such questions as the following: What are the viewing habits of Puerto Rican viewers? What are their subject matter preferences? What is the potential audience for Extension television? How does the new medium compare with other channels of communication in size of audience and in general effectiveness? These and similar questions can be answered only by a well planned and executed research program, which will be discussed further in the following (and concluding) chapter.

CHAPTER VII

SUGGESTED RESEARCH TO BE CARRIED IN PUERTO RICO

With the exception of the preceding chapter on "Your Garden," this dissertation has so far been concerned with research conducted on the mainland of the United States. This research has confirmed the potentialities of both closed-circuit and broadcast television as an educational medium and, in particular, as a method of Extension teaching. The question remains, however: will television prove similarly effective for Extensionists in Puerto Rico?

As already mentioned, many Puerto Rican extensionists are reluctant to use the new medium. When confronted with findings obtained in the United States, they argue that they are working under different conditions with people of a different culture. And so far, very little research has been conducted in Puerto Rico to prove whether they are wrong or right.

Even those Extensionists who use television do so by trial and error, without benefit of any systematic studies to help solve their problems and answer their questions. What are the most effective formats to use for a Puerto Rican audience? What are the best hours for reaching this audience? What types of programs does this audience prefer--and for that matter, is it interested in educational programs at all? Such questions require reliable answers, answers which would help Extension educators to fulfill the needs and interests of their clientele.

Without such reliable answers, Extensionists will be wasting and misusing a medium which reaches 184,000 out of a total of 540,000 Puerto Rican homes and is served by ten stations, two educational and eight commercial.[1] With such facilities at its disposal, it is important for the Agricultural Extension Service to systematically study how it can use the television medium most effectively.

Television as a Source of Information for Farmers and Housewives

Actually, there are several questions which need to be explored. In the first place, can television become an important source of information for Puerto Rican farmers and housewives?

According to research in the United States, it can. As previously mentioned, the experiments conducted by Iowa researchers Beal and Bohlen (1957) (28) and Beal (1958) (29) definitely demonstrated that mass media play an important role in the diffusion process, especially during the stages of awareness and interest; but even in the stages of evaluation, trial, and adoption, they were mentioned as influencing factors.

Are they similarly effective in Puerto Rico? In particular, how effective is television as a tool for Puerto Rican Extensionists? To answer these questions, a replication of Beal and Bohlen (1957) and Beal (1958) studies may be extremely useful.

---

[1] Distribution of television homes is as follows:

	Northern Zone	Southern Zone	Western Zone	All Zones
Urban areas:	103,000	14,000	15,000	132,000
Rural Area:	39,000	4,000	9,000	52,000
Total:	142,000	18,000	24,000	184,000

Of the total, 14,000 are high income; 91,000 medium income; and 79,000 low income homes.

Nature of the Extension Audience

Another area to be explored is the composition, viewing habits and preferences of the Puerto Rican Extension Service clientele. With a thorough knowledge of the potential audience, their habits and preferences, better television programs can be produced to fulfill the needs and interests of the Extension clientele.

Still other types of research should be duplicated in Puerto Rico to test whether the findings there will resemble those obtained in the United States. As previously noted, Williams (1956) (38) found that the Vermont Extension Service television program "Across the Fence" had been watched by 53% of the farm households, 42% of the non-farm households, and 37% of the urban households. A conservative estimate of the daily audience of this program was 20,000 to 25,000 families representing over 50,000 Vermont people.

Fessenden and Rohrer (1957) (41) found that 63 percent of the home demonstration clubs had watched the home demonstration Agent's television program. About 95,000 homemakers said they watched the program.

Other findings, the reader will recall, indicate that general farm television programs will have the largest number of rural viewers during the noon hours, farm breakfast hour, and the evening hours between 7:00 and 10:00 P.M.; and that homemaking programs will have the biggest audience during the afternoon.

In addition, research findings show that, in the United States, Extension audiences prefer information on consumer education, gardening, farm news and marketing.

Apparently, as the findings suggest, Extension television programs in the United States appeal to both rural and urban viewers and are capable of reaching appreciable audiences.

What application have such findings to the situation in Puerto Rico? In a country where the culture and conditions are different, will Extension television programs produce the same effects? What are the preferences and viewing habits of the Puerto Rican Extension clientele?

The Extension Television communicators should have data on these important questions in order to fulfill the needs and interest of their clientele.

Effectiveness of Extension Television

In the United States, as previously reported, research findings show that Extension television is an effective method of teaching farmers and homemakers new practices and ideas. Crile, Reist and Tait (1955) (37), for example, found that one-fifth of the men and two-fifths of the women in Lancaster and Lebanon Counties had used the information presented on television by Extensionists.

As a result of the Extension agents' television programs, both male and female viewers requested additional information or made contact with the Extension office.

Gauger, (1953) (44) found that television is an effective way of reaching farmers with new ideas on problems of soils, fertilizers, and crop rotation. The farmers interviewed said that television programs were usually better than meetings for getting information on farming problems.

Would similar results be obtained in Puerto Rico? What is the effectiveness of television as a teaching device for Extension information? These are questions to be answered by experimentation. Although

the producer of Your Garden feels that his program met with great success, he did not obtain sufficient data to actually confirm his feelings. No research was conducted to measure the real impact of this series.

In other phases of Extension work, Extensionists are beginning to use television for consumer and home management education. This author considers it necessary to conduct surveys to determine the real impact of these shows and of such programs in the Your Garden series as are still on the air.

Such surveys would also test to what extent television programs (including those which appeal to both urban and rural viewers) are effective in the dissemination of farm and home information.

Instructional Television

This is another area to be investigated--the potential of instructional television for training community leaders, who in turn will train other people in the different phases of Extension work.

In the United States, as has been noted, instructional television has been the subject of a great deal of research in the past year. A great many studies demonstrating the effectiveness of this medium as a training device are cited by Kumata (1956) (40), Crile (1957) (41) and Barrow and Westley (1958) (42) in their summaries on instructional television. A good example of the success of television as a training device is found in the reports of the United States Naval Training Devices Center. In these studies television compared favorably in all phases tested with face-to-face communication.

Consequently this author suggests that a series of exploratory studies be conducted to determine the potential of television as a device for training voluntary local leaders in extension work in Puerto Rico.

To train leaders at present, the Extension specialists have to attend most of the training meetings held in the different counties of Puerto Rico. Sometimes they spend the day traveling just to train three or four leaders in the county. Thus they are practically Extension Agents at large. And because of their crowded itineraries, they lack sufficient time to produce the technical material which is needed by the county agents for a more effective work.

The author believes that by using television as a training device, many counties can be served with a single telecast, if the program is well coordinated. For example, every year the county agents include in their annual programs a series of training meetings for 4-H Club leaders. To help them organize these meetings the State Extension 4-H specialist spends a great deal of time visiting the counties concerned. If such activities were coordinated in such a way that various counties would participate simultaneously, television might be an efficient device for training these leaders. It would be necessary of course to schedule all meetings simultaneously at the times of the telecasts, with county agents present to lead discussions following the transmission. These coordinated activities would save the time of the specialist, thereby allowing him to produce a greater variety of technical material. A first attempt to study the potential of television as a device for training voluntary local leaders was made during the telecasting of "Your Garden." Telecasts of this series were coordinated with the county agents' training meetings, and the subject matter specialist

covered thousands of leaders in each of the teleuditions. This saving of time allowed the Ornamental Horticulture specialist additional time to devote to the production of technical bulletins of great usefulness for the County Extension personnel.

Audience Appeals

In addition to the questions already proposed for study, there are still others to be raised. For example, which are the best ways for presenting educational information? What are the best appeals to use for arousing the interest of Extension clientele in new practices and ideas?

To help answer such questions, the author suggests replicating in Puerto Rico the Hovland and Associates studies (1953, 1957) (7) which investigated the order of presentation and the effect of appeals such as fear arousal in persuasive communication. A replication of some of these studies would help the Puerto Rican communicators become more effective in reducing their receivers' resistance to change.

Conclusion

In conclusion, one parting idea may be left with readers of this dissertation. Communication need not be based on guesswork. The communication process is subject to analysis. The resources and motives of the source, the content and construction of the message, the advantages and conditions of the possible channels, the needs and behavioral responses of the intended receivers--all of these should be ascertained as accurately as possible and carefully evaluated before communication begins. By doing this, the members of the Puerto Rican Agricultural Extension Service can maximize their effectiveness as educators and as agents of change in a mobile society.

APPENDIX A

EFFECTIVENESS OF INSTRUCTIONAL TELEVISION

Live Television, Kinescopes, and Films

1. Warner, R. S. and Bowers, J. Z. The use of open-channel television in postgraduate medical education. Journ. Med. Ed., 29: 27-33. October 1954.

   Four television clinics for postgraduate medical education were transmitted by open-channel at weekly intervals from 7 to 8 a.m. from the Salt Lake County General Hospital over KDYL-TV, Salt Lake City.

   Visual aids for each clinic included X-rays, electrocardiographic records, projected lantern slides and photographs and gross and miscroscopic pathological specimens. Printed charts were used for case histories, tabulations, and diagrams.

   Various methods of presenting material were explored including discussion of a variety of medical problems by a single physician, discussion of a single problem by a group of physicians, discussion of a field of medicine by a group of physicians utilizing a variety of specialized audio-visual techniques, and a group of diagnostic clinics.

   The subjects included in the four clinics were: X-ray diagnosis of calcifications in the abdomen, gastro-intestinal hemorrhage in the elderly patient, the approach to congenital heart disease, and a diagnostic clinic.

   Before the initiation of the television series, procedures for the evaluation of the educational impact, physician interest, and lay interest were designed. These included: A telephone interview with each physician in the area of definite television reception upon completion of the television series, a questionnaire at the end of each telecast, and a telephone survey after each telecast to determine the number of lay viewers.

   The questions for the evaluation procedures were designed with the assistance of Dr. Gerald Neuman, clinical psychologist, and the actual telephone interrogations were conducted by a marketing research firm.

   Telephone interviews were completed with 567 doctors out of the potential audience of 700 practicing within a 150-mile radius of the medical school.

Of 342 physicians participating in the clinics, over half were located outside Salt Lake County. This group represents 61 percent of those physicians who do not have easy access to the postgraduate facilities of the medical school. There was greater participation by physicians who live at a distance from the medical school.

Physician attendance for the 8 intramural courses presented at the Salt Lake County General Hospital in 1953 totaled 334. Maximum attendance for any one course was 66, as contrasted with a maximum figure of 221 for a television clinic. In addition, 230 physicians were sufficiently interested to view more than one of the televised educational programs.

New facts were obtained by 74 percent of those viewing one or more of the clinics. Sixty-one percent reported that previously acquired knowledge had been revitalized, while 53 percent reported renewed interest in a specific field. The rural impact of the program is exemplified by the fact that 85 percent of the physicians distant from Salt Lake City gained new facts as contrasted with 61 percent of the practitioners in proximity to the medical center.

Sixty-six percent of those who viewed the clinics felt that they were the preferable form of postgraduate medical education. The rural seminars and the courses given at the medical center were listed as second choice by 30 percent of the physicians interviewed.

The content and presentation of each clinic was rated "very good" by 80 percent or more of the doctor audience. Sixty-five percent of the physicians preferred a discussion of a specific subject by a panel of physicians.

Slightly less than 5 percent of all the physicians thought that medical clinics should be limited to closed-circuit television; television was thought to be a poor educational medium by 3 percent of the doctors.

Less than 1 percent of the lay population watched the early morning medical telecasts.

2. Berninger, L. M. and Watson, D. P. Impact of horticultural information on televiewers. Mich. Agr. Expt. Sta. Quarterly Bul., 37:187-192, November 1954.

This study was designed to measure the impact of 2-minute horticultural television programs on existing knowledge and attitude levels, on recall value, and on viewers' preference. Three productions (television recordings) were devoted to roses and one program each to peas and the Japanese yew. Eight classes of Michigan State College students were given a pretest, a post-test, and a recall test.

The results of the tests showed that the beginning levels of knowledge on various horticultural topics were extremely low, while the beginning attitude levels were favorable.

Two-minute television programs were effective in aiding the learning process. A significantly high percentage of information was immediately absorbed. Over a period of 3 weeks, the retention of this information was excellent, with no occurrences of significant decreases in knowledge.

An audience exposed to 6 minutes of information produced a significant positive increase in attitude. When retested 3 weeks following exposure, no significant changes in attitude were found.

The learning and retention of information as indicated in this study was heightened by the reinforcement of information through a brief but strong summary.

A high percentage of the students viewing the 2-minute productions endorsed the use of similar television programs in spite of the fact that the recordings were not completely professional in character.

3. Coffin, T. E. Impact of TV vs. magazine advertising: Snorkel pen. 10 p., New York, National Broadcasting Co., n.d.

The Sheaffer Pen Company introduced its new "Snorkel" pen by advertising it on a single half-hour television program, "Your Show of Shows," and a single insertion of a double-page spread in "Life." The Snorkel pen offered an unusually clear test of the impact of the two media, because this was a new product, with no previous advertising history and no simultaneous campaigns in other national media. The cost of the two campaigns was approximately equal.

Advertest Research made the study. They made 2,900 random telephone interviews in the New York area. These included both television owners and nonowners. One thousand two hundred and fifty were made the day after the television program, 1,650 were made in the week following the appearance of the "Life" advertisement. The "Life" interviews were split so that half occurred about 3 days after publication, to insure recency of exposure, and half 7 days after, to allow readership to accumulate as much as possible before the appearance of the next issue.

For every hundred people who read "Life", 86 saw the television program. If you stop there, magazines come out ahead and television behind.

But if you go another step deeper, you find that for every hundred people who recall seeing the advertisement in "Life," 159 recall it on television -- a ratio of one and a half to one, in favor of television.

And even more important, for every hundred who remembered the contents of the magazine advertising, 233 remembered the television commercial; 2 to 1 in favor of television.

And most important of all -- how many sales points implanted? For every hundred ideas recalled as a result of "Life" 330 were recalled as a result of television. Radio, 3 to 1 for television.

The Merchandising Department had its Field Supervisors call on 72 fountain pen dealers in several cities across the country, during the week after the television program. Without referring to the program directly, they asked whether there had been any increase in requests to see the new Snorkel pen in the last week. Sixty-four percent reported that there had been a noticeable increase in customer requests since the television program. And though they were not asked about the program, 41 percent of these spontaneously mentioned it and attributed the increase to the television advertising.

These results fit together with the consumer interviews by Advertest, giving a well-rounded body of evidence at the consumer and retail level, testifying to the effectiveness of television advertising and to its impact ratio -- compared to magazines -- of 3 to 1.

4. Rock, T. T., Jr.; Duva, J. S.; and Murray, J. E. A study of learning and retention from television instruction transmitted to army field force reservists. Special Devices Center, Office of Naval Research, Dept. of the Navy, Technical Report - SDC 476-02-S3. 50 p., Port Washington, L. I., N. Y., 1951.

Eight 1-hour lessons were telecast at weekly intervals over 10 stations to more than 3,000 Army Field Force reservists who were assembled in 160 groups to view the programs. Tests were given to the reservists immediately before and immediately after each instructional session, and some questions were repeated later to measure retention. Questionnaires were administered after the first and last programs to determine how acceptable the reservists found television instruction, and experts in military and civilian training viewed each of the programs and wrote comments on prepared forms. This was a joint project between Fordham University and the Special Devices Center.

Television instruction is an effective means of training large numbers of reservists dispersed in widely separated groups. All grades of personnel made statistically significant gains on test scores for each of the programs.

Reservists not only learned from the television instruction, but they remembered most of what they had learned when retested 4 or 6 weeks later.

Television instruction continues to be highly acceptable to the reservists after 8 weekly sessions. Over 70 percent of the officers stated that they preferred television instruction to conventional classroom teaching, and indicated that the television programs had been more instructive than the average training films they had viewed within the past 2 years. About 60 percent of the enlisted men expressed the same preferences.

The amount of gain on test items is related to the explicitness of treatment of topics on which these items are based. Items that are explicitly covered in the television sessions show large and significant gains. Some sketchily treated items show gains, but many of them show losses in percentage of correct response after instruction indicating that trainees were confused rather than instructed by vague or diffuse treatment of topics.

The type of instructional treatment given a topic influences the amount of learning. The various types of treatment recognized in the analysis are listed below in rank order of their effectiveness. Each of the first two types listed was more than twice as effective in producing learning as either of the last two types listed.

Narration with meaning-conveying film.
Drama with some form of narration.
Narration.
Narration with "atmospheric" film.
Drama.

5. United States Naval Training Device Center. Summary of instructional television research reports. 4 p., Port Washington, N. Y., U. S. Naval Training Device Center, n.d.

This summary of instructional television research reports integrates the findings of the various studies made by the United States Naval Training Device Center.

Live instructional television for the classroom

Effectiveness. -- A television program can be at least as effective as comparable means of instruction.

Acceptance. -- Television instruction is well liked. Well prepared programs were highly acceptable after an 8-week period of television training.

Mass training. -- Television is a feasible and effective means for instructing widely separated groups.

Retention of learning. -- Most learned material was retained over a 6-week period.

Level of instruction. -- All grades of personnel learned from television programs.

Novelty effect. -- In 1950 trainees said that the television instruction they received was more effective than the average training film. This instruction was carefully prepared, skillfully presented and the trainees tried to learn.

Effective presentations. -- Items that were explicitly covered were well learned. Sketchily treated items were not learned.

Dramatic or factual. -- Learning occurred when specific information was presented. Little learning occurred from dramatic or situational presentations.

Screen size. -- Twelve to twenty-inch television screens were said to be adequate by trainees.

Applicability. -- A criteria check list has been developed to determine courses of instruction which are suited for television instruction.

Single camera. -- One television camera will fulfill most military training needs for reliability and flexibility, two cameras are more desirable.

Instructors. -- Qualified instructors can be trained to teach by television in a relatively short time.

Minimum equipment television. -- Experience has indicated that a minimum of equipment gives the greatest training per dollar expended for televising.

Courses. -- Effective television training has been carried out in large number of subject areas.

Films. -- Films are effective on television.

Television recordings (kinescopes). -- Film recordings of television programs are a valuable byproduct.

Mobile television. -- A mobile television studio and associated equipment can be used to present and record television programs.

Film recordings of television programs

Effectiveness. -- Film recordings of television programs (kinescopes) are very satisfactory for military training even though picture quality may be poor.

Use. -- Kinescope recordings were recommended for training instructors, duplicating lessons, disseminating new developments and as a substitute for instructional films.

Color. -- Color, unless it is essential to the subject being taught, does not increase the effectiveness of television training.

Specialized television applications

Training device viewing. Training devices may be televised to a larger group than can normally see them. Thirty-one principles for improving visibility have been discovered.

Critical factors. -- Television expense and labor can be more easily justified when the training situation is dangerous or mass training is essential.

Incidental television instruction

Dramatizations. -- Dramatic treatments brought about less learning than other types of treatment.

Attitudes. -- Polls have shown a definite acceptance by civilians of programs dealing with book reviews, social problems, history, and the like.

6. United States Naval Training Device Center. Summary of sixty-five instructional film research reports. 11 p., Port Washington, N. Y., U. S. Naval Training Device Center, n. d.

This is a summary of 65 instructional film research studies made by the Instructional Film Research Program at the Pennsylvania State University under the sponsorship of the Department of the Navy and Army. Much film research has direct application to television use.

For the curriculum planner

Effectiveness. -- Films are at least as effective as other comparable means of instruction. Films alone can be used to teach factual information.

Motor-skills. -- Motor-skills that are at least as complex as operating a sound motion picture projector or performing gymnastic skills can be taught by means of films alone. An instructor can increase his effectiveness by using film loops to teach a skill to groups while he devotes his time to coaching individuals. Daylight viewing of films is very effective. Optimum viewing occurs within 12 screen widths and 30 degrees from the center line.

Mental hygiene. -- In addition to being effective for teaching skills and factual information, suitable films can be used to improve personal adjustment.

Specific films. -- Specific content in films is required to meet specific instructional objectives. Films with broad superficial content aimed at a generalized audience are likely to be less effective than films with well specified content aimed at an audience of known characteristics.

Specific audience. -- Films should be prepared for a specific audience.

Purposeful use. -- Use films to teach. Films are likely to be more effective if they are integrated into the curriculum, and if they are related to carefully formulated instructional objectives.

Consistent use. People learn to learn from films. When films are used as fill-in, for entertainment, or if the content does not appear to the trainee to be pertinent to the course being studied, there is likely to be less learning than would otherwise be the case.

Evaluation. -- Films should be evaluated using a film analysis form.

Dramatic films. A straightforward expository or documentary approach in films will be as effective or more effective for teaching information than a film that incorporates dramatized sequences especially if these are elaborately staged.

Perceived usefulness. -- Films that are perceived by students to contain useful material will provide the greatest amount ot learning.

Attitude changes. A carefully prepared film may change an attitude.

Inexpensive films. -- Films can be prepared locally in a few weeks by nonprofessional personnel for less than $100 a reel.

For the film planner and producer

Camera angle. -- Show a performance on the screen the way the learner would see it if he were doing the job himself.

Rate of development. -- The rate of development of a film should be slow enough to permit the learners to grasp the material as it is shown.

Succinct treatment. -- Presenting only the bare essentials or rapid coverage of subject matter may be very ineffective.

Show errors. -- Learning performance skills from films will be increased if you show common errors and how to avoid them.

Repetition. -- Organize a film so that important sequences or concepts are repeated. Repetition of films, or parts within a film, is one of the most effective means for increasing learning to a required level.

Organizational outline. -- Films which treat discrete factual material appear to be improved by the use of an organizational outline in titles and commentary.

Introductions. -- Present relevant information in the introduction and tell the viewer what he is expected to learn from the film.

Summary. -- Summarize the important points in the film in a clear concise manner. Summaries probably do not significantly improve learning unless they are complete enough to serve as a repetition and review.

Visual potentialities. -- Take advantage of the ability of the motion picture medium to show motion, to speed up and slow down motion, to telescope and otherwise control timing of events and processes, to bridge space, and to organize events and actions. The visuals and commentary in a film should reinforce each other.

Picture-commentary relationship. -- The commentary of a typical informational film appears to teach more than only the pictures of that same film when learning is measured by verbal tests. This does not necessarily mean that the commentary has greater inherent effectiveness than pictures; it may mean that producers are currently relying more heavily on commentary than on pictures or on the optimum integration of the two. With films designed to teach performance skills, where learning is measured by nonverbal tests, the pictures appear to carry the main teaching burden.

Concentration of ideas. -- Ideas or concepts should be presented at a rate appropriate to the ability of the audience to comprehend them.

Commentary. -- The number of words (per minute of film) in the commentary has a definite effect on learning. Care should be taken not to "pack" the sound track. Application of readability formulas to improve a commentary may not do so.

Use of personal pronouns. -- Use direct forms of address (imperative or second person) in film commentaries. Avoid the passive voice.

Nomenclature. -- Introduction of new names or technical terms in a film imposes an additional teaching burden on learners, and may impede the learning of a performance skill.

Comparative effectiveness of training aids. -- No differences were found in the training effectiveness of cutaways, mockups, and transparencies used in instructional sequences.

Special effects. -- Special effects used as attention getting devices have no positive influence on learning.

Optical effects. -- A film in which such optical effects as fades, wipes, and dissolves have been replaced by straight cuts, teaches just as effectively as a film which uses these effects.

Stereoscopic films. -- In the one experiment conducted, the addition of stereoscopic vision did not increase learning of a motor skill performance. For teaching a complex motor skill a three-dimensional model may be better than a two-dimensional aid.

Color. -- Experimentation has not yet demonstrated any general overall increased learning as a result of using color in instructional films.

Music. -- Preliminary experimentation suggests that music does not add to the instructional effectiveness of an informational film.

Pretesting. -- Scripts, workprints, demonstrations, and final prints can be evaluated quickly using the learning profile method of film evaluation which requires a group of trainees to estimate their own learning. A film analysis form should be used for preproduction evaluation of films. Audience reactions to films can be economically obtained using infrared photography.

Film loops. -- Short film loops which can be repeated continuously as many times as desired, appear to be a good way of teaching different skills.

Participation. -- Learning will increase if the viewer practices a skill while it is presented on the screen, provided the film develops slowly enough, or provided periods of time are allowed which permit the learner to practice without missing new material shown on the screen.

Dramatic sequences. -- Incorporation of dramatic sequences such as comedy, singing commercials, or elaborately staged settings in films to teach factual information will not improve the film.

Filmographs. -- Fiomographs which incorporate still shots rather than motion may be equally effective for some purposes and be less expensive than motion pictures.

Visual recordings. -- Films may be produced to make a visual recording of a task that may be difficult to describe with words alone.

Research findings. -- Research findings should be applied to training film production.

Inexpensive films. -- Because color, optical effects and have little to do with increasing learning from films it is possible to eliminate them. Films prepared in this manner can be made inexpensively and can be produced quickly.

Protagonist. -- In a film intended to change attitudes it is desirable to characterize the protagonist or commentator clearly. It is even more important that he be a prestige figure close to the audience's reference group.

For the instructor:

Let the film do the instruction. -- Good films can be used as the sole means for teaching some kinds of factual material and performance skills. Where the instructional situation makes it advisable, take advantage of this possibility.

Instruct students to learn from films. -- Tell the viewers firmly, that they are expected to learn from the film.

Increase the amount of learning. -- Learning can be increased by repetitive showings, pretesting, posttesting with knowledge of results, and introducing the film and stating the purpose and importance of the showing.

Use of study guides. -- Ability to learn from films improves with practice in learning from films. Trainees will learn more if printed study guides are used before and after film viewing.

Distraction. -- Note-taking should not be encouraged during the average film showing because it interferes with attention and hence learning.

Use film loops in the practice area. -- One showing of a film dealing with a complex skill may be insufficient. Show a film in the practice area so that the student can easily refer to the film model as often as necessary. This can be accomplished by rear projection of film loops on daylight screens in the work area. Students should sit within 12 screen widths and within 30 degrees of the center line.

Use mental practice. -- Men can partially learn to do a skill by watching a film and imagining that they are performing the skill and by going through the skill "mentally," even though they do not have the equipment available. Films can provide a model for guided "mental" practice.

Length of film sessions. -- Film viewing sessions of informational material can extend to at least 1 hour without reduction in training effectiveness.

Evaluate film showings. -- Do not assume that learning has occurred as a result of showing a film. Evaluate the effect of a film by giving a test.

Principles. -- Explain principles of operation when it may be necessary for a trainee to generalize his learning to a different but related situation.

Classroom Compared With Television: Open Circuit

1. Shimberg, B. Effectiveness of television in teaching home nursing. A comparison of television and classroom instruction in teaching the Red Cross Home Nursing Course. Preliminary Report. Ed. Testing Service, RB-54-19, 49 p., Princeton, N. J., 1954.

The National American Red Cross requested Educational Testing Service to evaluate the effectiveness of television in teaching the Home Nursing Course. Three experimental groups were used: (1) TV-only, which received all of its instruction by television (2) TV-plus-practice, which also received instruction by television but in addition attended weekly practice sessions, (3) Standard Classroom Group, which was taught the regular course without the use of television. The two television groups were to view 13 half-hour programs twice a week in their own homes. The classroom group was to attend seven 2-hour sessions where they would receive lectures, demonstrations, and supervised practice.

Participants in the study were adult volunteers from organized groups in Houston and Oklahoma City. About 650 students were tested before receiving instruction and about 400 after they had completed the course. Written tests as well as individual performance tests were used to measure the knowledge and skill of the student in home nursing.

Television instruction was found to be as effective as classroom instruction in teaching facts about home nursing and in promoting an understanding of the principles involved in care of the sick.

Students taught by television did almost as well on the performance test as those taught in the classroom, although they spent less time receiving instruction. While the differences in final test scores between the two television groups and the Standard Class group were statistically reliable, this difference was too small to be considered of practical significance.

The television groups gained more than the classroom group in proportion to the amount of time spent receiving instruction. The average television student spent between 5 and 6 hours in front of the television set, while the average classroom student spent 11 or 12 hours in class.

The attitude of those who viewed the television programs regularly was overwhelmingly favorable toward this method of instruction. Most students seem to have found the programs interesting and worthwhile; they liked the teacher and generally approved of the methods used in teaching the course.

Practice sessions were perceived as a desirable adjunct to the television instruction by those who had only viewed television. The group which had actually attended practice sessions rated them as "moderately helpful." It was the concensus of students in both groups that such sessions should be held weekly or bi-weekly.

There were indications that more people might participate and that there might be even greater satisfaction with the course, if consideration were given to suggestions like the following, which came from students: (1) Present the course at a more convenient time, (2) compress the course into a shorter period (i. e. 7 weeks is too long), (3) organize practice sessions so that students get more out of them, (4) provide students with a study guide or course outline, and (5) take into consideration the specific home health needs and interests of the audience.

2. Allen, M. R. Quartermaster training command educational television study. 33 p., Fort Lee, Va., Quartermaster School, Quartermaster Training Command, 1954.

The effectiveness of a 4-hour course of instruction via television as compared to regular classroom instruction was studied. The participants were 107 Quartermaster ROTC students, 60 in the control group and 47 in the experimental group, 10 studio participants, and 42 reservists. This experiment was different from other educational television experiments completed by the Armed Forces in that it was conducted on a low cost basis, using army personnel and employing no special actors or writers.

The study indicates that low cost production is possible for the Armed Forces, that highly skilled and professional television actors are not required, that superior classroom and field instructors might be well adapted, with little additional training, for television instruction.

The effectiveness of instruction via television appeared to be equal to that of classroom instruction (as measured by a 32-item examination) for short orientation type courses emphasizing the lecture-demonstration methods of instruction.

The classroom group had a slightly higher average score on the examination than did the television group. (Raw score average, 27.7 to 26.5). The author states that this difference may be compensated by the fact that the classroom group was higher academically upon comparison of their university grades.

Based upon the 20-item survey questionnaire, the programs were highly acceptable to both the ROTC students and the reservists of the Houston area participating.

The majority of the ROTC students taking the instruction via television indicated: (1) That the television programs were at least equal to, or more interesting than classroom instruction. (2) That learning via television was as easy or easier than classroom instruction. (3) That 1 hour should be the maximum length of any program by television. Further acceptability of television as a teaching method was indicated when more than half of the students questioned concerning opportunity of having instruction either way, preferred television to classroom instruction.

Reserve officers (all ranks, branches, and services were represented) were unanimous in their belief that telecourses for reservist credits would be of great value and convenience. Despite the nature and level of the course, and its emphasis on the Quartermaster Corps, the great majority stated the programs were very good or superior. No one rated the programs as "poor." Three times as many of the reservists responding preferred television instruction to regular reserve classroom training.

The technique of simulating a class with a selected studio group provides more nearly the normal classroom atmosphere and environment; it permits a greater exchange of information between instructors and students; and, it aids the classroom instructor, who has not utilized the television method with an audience as well as a camera, in his transition from the classroom to the studio.

Yellow on black, extreme contrasts of gray, and off-blue-black on buff or beige gave best results on visual aids. White reflects too much.

For nonresident instruction, open circuit, commercial, or educational stations can reach more students for less money than regular reserve sessions. Even if learning by television were less effective (and this cannot be generalized depending upon the content and nature of subject, the instructor, methods, etc.), the overall effect of learning upon so many more people would more than compensate the slight difference.

3. Allen, W. H. Spanish and German by television. Modern Language Jor., 40:139-142. March 1956.

The University of Wisconsin broadcast two non-credit foreign language courses over WHA-TV, in 1954. Telephone and personal interviews were held with 72 percent of the 197 registrants. The one-half hour lessons were presented once a week or 10 weeks. German was given on Monday evenings and Spanish on Tuesday evenings. There was an enrollment fee of $2.00. Home study manuals were prepared to supplement the courses.

The registrants in the courses were rather evenly distributed by occupation of the head of the household, being predominantly in the professional, semi-professional-proprietor-managerial, and in the clerical-sales occupation groups. Registration was most readily made by high school graduates and by people in their 30's and 40's. Women outnumbered the men in every case.

About 66 percent of the Spanish registrants and 87 percent of the German registrants viewed over one-half of the televised programs. The percentages of those who viewed at least three-fourths of the programs were 30 percent for the Spanish and about 63 percent for the German registrants. There was a high incidence of reading of the manual. More registrants read all of the lessons in the manual than viewed all of the programs on television.

There was a substantial additional audience for the language courses in the homes of the registrants. In 85 percent of the German-viewing families and in 67 percent of the Spanish-viewing families additional family members also viewed the programs. And in over one-fifth of the families, at least one other family member used the home-study manual.

About 67 percent of the registrants stated that the courses gave them the kind of instruction they wanted, but satisfaction being somewhat higher for the German registrants. The instructor was considered to be the most liked feature of the television presentations. The most effective method of instruction was the drill and vocal practice techniques. The factor most widely criticized in both courses was the "too rapid pacing" of the instruction.

4. Western Reserve University. Telecourses at Western Reserve University. A summary report of the first three years, 1951-54. 17 p., Cleveland, Ohio, Western Reserve U., 1954.

Western Reserve University began offering regular university courses in a combination of television with home study for credit in 1951. The courses are telecast over WEWS, a commercial station, from 9:00-9:30 a.m. on weekdays. Some short noncredit courses have also been given at 9:30 a.m. on Saturday and 3:00 p.m. on Sunday.

Students who register for credit pay the regular university tuition, they receive a copy of the syllabus and have the privilege of taking the final examination. A text book is required.

A high proportion of telecourse students are women. This was expected because of the hour of presentation. Commercial surveys indicate that 10,000 to 30,000 sets are tuned daily to the program.

The Cleveland Public Library reported that the mention of a book in a telecourse lecture immediately resulted in clearing their shelves of that particular title.

Out of 289 students who registered for credit 209 completed, 46 withdrew, and 34 were incompleted at the time of the survey.

In 1951 a detailed comparison was made of the academic records of the telestudents and campus students in the psychology course. The median grade of the telecourse students was 13 points higher than those received by the campus students. It seems apparent that those who received credit by television home study achieved as much as the regular students who had the benefit of classroom contact with the instructor. The written material, a great deal of which was required in the telecourse, was excellent. The age range of telestudents was from 19 to more than 50 and some had not been in school for more than 30 years.

Every house with a television aerial was visited in sample areas of Cleveland in 1952. Of the television owners about 15 percent had listened to some of the classes and 47 percent knew about them. The median age of the viewers was 37 years, about 82 percent had completed high school, 11 percent had completed college. Approximately 11 percent were men.

The 1953 data were obtained by personal interview and by telephone. About 6,000 adults viewed the program daily. This was 1.2 percent of families with television and 20 percent of those who viewed any program at 9 a.m. Compared with telecourse viewers who stopped viewing, those who continued to watch had more education, they had been out of school for a shorter time, and they had fewer learning distractions at home. Economic status, size of family, children at home, age, and initial motivation seemed to have little influence on how steadily a person viewed telecourses. Telecourse students prefer courses that are aids in everyday living.

In 1954 a sampling of credit and noncredit student reactions to the telecourse, Principles of Sociology was taken.

The reactions of the credit and noncredit students were most similar in judging the lectures to be at the proper level of difficulty, in failing to get others to watch the television courses with them, in failing to discuss the subject with others, in finding the course aided them with personal problems and to better understand political and social problems, in making no suggestions for the instructor, for improving the television course, and in proportion of emotional reactions to the telecourses.

5. Husband, R. W. Television versus classroom for learning general psychology. The American Psychologist, 9:181-183, May 1954.

During the winter quarter of 1953 Iowa State College presented Psychology 204 under four conditions: (1) Television at home -- watched and listened at home, read some text and came to Ames to take same examinations as campus students; (2) Studio class -- in studio while television presentation was given; (3) Kinescope class -- campus students watched films of the television talks with 20 minutes of informal discussion afterward; (4) Two campus classes -- given same materials, but in classrooms, for 50 minutes, in usual classroom manner.

The 30-minute television program was given over WOI-TV for 10 weeks at 2:30 p.m. on Monday, Wednesday, and Friday.

Spot surveys of sets tuned in suggested that there was an afternoon audience of at least 60,000. More than 1,000 letters were received, all but 2 complimentary.

Fifty-six persons enrolled for credit, 54 completed the course by passing all tests. More than 100 noncredit viewers bought copies of the book at the college bookstore. A composite picture of the television-for-credit student is that of a 37-year-old housewife, with two children, not employed, and with no college credit prior to this course.

The television classes did better in grade point averages than three of the campus classes. The television-at-home group had no failures and twice as many A's pro rata as the campus students earned that quarter.

6. Evans, R. I. An examination of students' attitudes toward television as a medium of instruction in a psychology course. Jour. Appl. Psychol., 40 (1):32-34, February 1956.

The attitudes of 74 University of Houston students toward television instruction enrolled in an elementary psychology course taught partly by television and partly through on-campus discussion groups were determined by means of a special questionnaire submitted at the time of the final examination.

Seventy percent of the students revealed an interest in taking another course involving television instruction, 13 percent would not do so, and 16 percent were undecided. Among the "open-end" question responses, a feeling was revealed that television lectures were better developed than traditional classroom lectures, involved fewer disturbing interruptions from the students, but lacked opportunities for class participation and were subject to technical electronic interruptions.

The attitudes toward supplementary class discussions revealed responses which favored them in 42 percent of the cases and felt them of no appreciable importance to learning in addition to television lectures in 56 percent of the cases. Two percent of the students were "undecided" concerning their value. Among these

"open-end" question responses it was reflected that their importance centered around advantages gained through some face-to-face contact with the instructor for those favoring them, and the feeling that television lectures were sufficiently complete in themselves by those who found no need for them.

Close Circuit - Television

1. Carpenter, C. R. and Greenhill, L. P. Instructional television research. Project number one: An investigation of closed-circuit television for teaching university courses. 102 p., University Park, Pa. State U., 1955.

The second semester of general chemistry, general psychology, and the psychology of marriage were the three courses of study selected for this experiment conducted by the Pennsylvania State University. About 830 students were used in the experimental and control groups.

Chemistry 2, (second semester), lectures were given twice a week to 450 students divided into three groups. One group was taught in the television originating room, the second (divided into four sub-groups) in television receiving rooms, and the third in the originating classroom without television equipment present. All 450 students had one recitation and two laboratory periods of 3 hours each per week. Only the two weekly lecture periods were directly concerned with television presentation.

General Psychology is a one-semester lecture discussion course. Two instructors taught under each of three conditions: Control, television-originating situation, and television-receiving classes. The teaching plan was so designed that it controlled for instructor differences, for class size, and to a large extent, for differences due to time of day and order in which the lectures were given. About 320 students were involved.

Psychology of Marriage is a one-semester course. For this study it was taught by one instructor to about 120 students, of whom 30 were in the television-originating room, and 30 in each of three television-receiving rooms. There was no control group.

Six objectives of the research and general conclusions based on the findings follow:

1. To compare the relative effectiveness of conventional instruction with the same instruction presented over closed-circuit television for a full academic semester.

Relevant finding: The overall comparative measurements did not yield significant differences in informational learning by students in two different courses of psychology and the lecture-demonstrations part of general chemistry.

2. To study the acceptability of unmodified courses presented to students over closed-circuit television.

Relevant findings: Instructional television was acceptable to students for the courses as taught in the context of the experiment. Students' general attitudes towards televised instruction as compared with direct instruction were mainly neutral or slightly negative.

3. To investigate trends in effectiveness and acceptance during a full semester of regular instruction.

Relevant finding: No statistically significant trends in effectiveness or acceptance were found over the course of a full academic semester of televised instruction.

4. To study the feasibility of using "moderate cost" closed-circuit television for teaching selected university courses.

Relevant finding: It was found to be practical to use vidicon closed-circuit television equipment under the conditions of the experiment, but there are many problems of feasibility and costs which need further study preparatory for full scale operations.

5. To study the acceptance of instructional television by administrators and faculty members.

Relevant findings: University administrators accept and see promise in closed-circuit television as one means of solving different problems related to increased student enrollment, shortages of instructors and limitations of academic space and facilities. Experienced instructors generally do not prefer instructional television, as used in this experiment, to their accustomed teaching procedures. Faculty members are willing to accept closed-circuit television on an experimental basis.

6. To explore the possibilities of using closed-circuit television to extend the power and influences of good and superior instruction to large numbers of students.

Relevant finding: Practical use of two systems suggests that the potentialities are very great for using single or multiple systems of closed-circuit vidicon television for channeling excellent instruction from a single source or sources to very large numbers of university students.

2. Seibert, W. F. A brief report and evaluation of closed-circuit television instruction in mechanical engineering 360. 15 p., Lafayette, Ind., Purdue U., Audio-Visual Center, 1957.

During the fall of 1956 an experiment in teaching a course in mechanisms by television was conducted at Purdue University. A

group of 37 students, divided into 2 classes, received conventional instruction throughout the 16-week semester. A second group of 46 students, in 2 classrooms, received the non-laboratory portion of the instruction by television. Laboratory instruction for all groups was conventional. Television students viewed a 24-inch receiver. A telephone in the classroom was used in asking questions.

Student achievement was the same, for all practical purposes, under televised and conventional instruction conditions.

Student attitudes toward televised instruction were mildly negative prior to experiencing such instruction. Through exposure, students were somewhat less favorably impressed by certain aspects of such instruction.

Favorable responses were most numerous on items concerned with (a) the instructional value of television demonstrations, (b) student comfort during televised classes, (c) classroom discipline, and (d) general acceptance of television as an instructional medium.

Students appeared most disturbed by the following aspects of television instruction: (a) the interest which it can capture and hold, (b) the inability to discuss questions with the instructor, (c) opportunities to take notes in class, (d) lack of opportunity to become acquainted with the instructor, and (e) their inclination to prepare for television class meetings.

3. Seibert, W. F. A brief report and evaluation of closed-circuit television instruction in physics 230/240. 15 p., Lafayette, Ind., Purdue U., Audio-Visual Center, 1957.

During the fall semester of 1956 Purdue University conducted an experiment in teaching physics by television. One group of 50 students in 2 sections received conventional instruction of five 50-minute periods a week during the same 8-week session that a comparable group of 50 students received television instruction for three 50-minute periods a week. Both the conventional and television groups received the same large group lecture-demonstrations twice a week.

The four groups of students were identically tested for achievement every 2 weeks.

The television instruction which was given resulted in learning scores which were not significantly smaller, on the average, than those earned by conventionally taught students; however, there was some tendency for television groups to score lower than conventionally taught groups. It seems likely that these differences can be largely, if not completely, erased through increased understanding of and experience with the television medium.

Students who experienced television instruction exhibited some significantly less favorable attitudes toward it after they had the experience. There is reason to believe that this result may be a function of factors besides the presence of television.

There was a strong desire on the part of the students, both before and after experiencing television instruction, to know their instructor better and to be able to discuss questions with him.

4. Becker, S. L.; Dunlap, R.; and Gerber, J. C. A comparison of three methods of teaching modern literature. 23 p., Iowa City, The State University of Iowa, 1957.

A four-semester hour course in modern literature was taught at the State University of Iowa by three methods, as follows:

Predominantly discussion with sections of approximately 30 students meeting 4 days a week under a single instructor. There were 12 discussion sections in the study.

Lecture-discussion with sections of approximately 150 students meeting 2 days a week for lectures and 2 days a week for discussion. On the latter days, the large groups were subdivided into sections of approximately 20 students each. For most of the subsections the discussion leader was not the lecturer. There were two lecture-discussion sections in the study.

Television-discussion with 73 students meeting 2 days a week for television mediated discussion and 2 days a week for a lecture in a regular classroom. On the former days, the students were divided into 3 groups, 8 or 10 along with the instructor in the television studio with the remainder distributed between two viewing rooms where they could see and hear the instructor and discussants in the studio and could enter the discussion by means of overhead microphones.

In general, the Television group was least favorable to the course, the Discussion group was most favorable. In spite of this generally unfavorable attitude, the students who had received part of their instruction via television tended to be more favorable to the use of the television medium for instructional purposes than were either of the other two groups. The Discussion group perceived this course as requiring the most preparation; the Television group perceived it as requiring least. Perceived thought stimulation, and learning followed this same pattern; Discussion students reported that they were stimulated to greater thought while the Television students reported that they were stimulated to the least thought. Discussion students thought they learned more and were best able to read competently the various literary forms and to discuss the important aspects of each. The Television students thought they were least able in

these respects. The Television students sais they were most frustrated in their desires to participate orally in the class, the Discussion students reported the least frustration of this sort.

Most students indicated a preference for a combination of lectures and discussion for this course, but preferred discussion only to lecture only. The faculty were more evenly divided between a prefernce for discussion and a combination of lectures and discussion. They were also more negative to a "lecture only" course than the students were.

The instructor of the Television group and his two graduate assistants, who acted as proctors, thought that closed circuit television was better suited for the lecture than for the discussion part of the course.

A comparison of a sample of final examination grades from each of the groups showed the highest mean score for the Lecture group and the lowest for the Television group. These differences were not statistically significant.

5. Kanner, J. H.; Runyon, R. P.; and Desiderato, O. Television in army training: Evaluation of television in army basic training. George Washington U., HumRRo Tech. Rpt. 14, Washington, D.C., 1954.

The purpose of this study was to obtain basic information on the comparative teaching effectiveness of television and the Army's regular basic training instruction.

The procedures employed were: (1) Selecting 14 hours of instruction representative of the information and skills taught in the first 8 weeks of Army basic training; (2) preparing parallel television instruction, duplicating the content, sequence, and training procedures of the 14 selected regular hours; (3) equating for instructor differences by using the same instructor for television and regular instruction; (4) training groups of basic trainees, matched for Area I scores, by television and regular instruction; (5) administering achievement tests immediately after and approximately 1 month after both television and regular instruction. About 12,000 basic trainees were tested.

The basic comparisons between television and regular instruction under matched conditions indicated: (a) Television instruction was at least as effective as regular instruction; (b) television instruction was more effective for lower-aptitude groupsl (c) television instruction was remembered at least as well as regular instruction.

The comparisons between kinescopes and regular instruction under matched conditions indicated that kinescope instruction was as effective as regular instruction.

When kinescopes were used for review purposes following initial instruction: (a) Test performance for groups receiving one kinescope review was significantly higher than scores obtained immediately after initial instruction. (b) The test scores of low-aptitude trainees receiving the one kinescope review approached those of high-aptitude groups following initial instruction.

These results suggest that, should conditions require the Army to adopt a mass medium of instruction such as television, instruction of the type used in this study could be presented by television with the strong assurance that there would be no loss in learning effectiveness.

6. Dowell, E. C. An experiment in training by television. 14 p., Keesler Air Force Base, Mississippi, 1954.

Training by closed circuit television and by conventional methods of presentation and the feasibility of making kinephoto recordings for use as training films in specific courses were investigated at the Keesler Air Force Base.

The use of live television proved to be equally effective as conventional methods of instruction. Use of the television medium of communication was limited to the transmission of lecture-demonstrations for viewing by students in remote classrooms. This evidence tends to further confirm the premise that unlimited numbers of students can learn satisfactorily by viewing televised programs of good instructors performing as they normally would in the classroom. This proved to be true for all levels of student ability. The amount of learning that took place in the experimental block of instruction was sufficient for both the control and the experimental students.

Under present conditions, the practical limitations are such that the use of live television in technical training programs cannot be justified on the basis of providing more economical mass training.

The use of live television seems more readily adaptable to training programs concerned primarily with attitudinal changes and the dissemination of pure information. When skills must be acquired on concepts applied, the training must be supplemented with the opportunity to practice.

Certain types of training films can be made inexpensively and expeditiously as television recordings. This technique is particularly adaptable to recording demonstrations and presentations by well qualified instructors.

7. Rock, R. T., Jr.; Duva, J. S.; and Murray, J. E. The effectiveness of television instruction in training naval air reservists. (Rapid mass learning.) Special Devices Center, Office of Naval

Research, Dept. of the Navy, Technical Report - SDC 476-02-S2, 68 p., Port Washington, L. I., N. Y., 1951.

Comparable groups of from 100 to 120 naval air reservists were taught a series of training lessons by 1 of 3 methods: Television, television recordings (kinescopes) projected as motion pictures, and conventional classroom instruction. Evaluation of the effectiveness of the programs was made by information tests and comments by the trainees. This was a joint project between Fordham University and the Special Devices Center.

The data of this study shows that television is a feasible and effective means of conveying instruction to classes at widely separated stations.

For both officers and enlisted airmen, television instruction was found to be more effective than teaching by local instructors in half of the comparisons made, and it was equally effective in teaching by local instructors in an additional one-fourth of the comparisons.

Comments written by trainees immediately after television sessions indicated that the television instruction was in general very favorably received. Some details of various programs were given specific criticisms, but there were only a few scattered complaints that any lesson as a whole was poor or dull. Very few of the participants in the television instruction sessions indicated that they believed either training films or ordinary classroom instruction were as good or better than television teaching.

Recordings of instructional telecasts were extremely effective when projected as sound moving pictures. For the officer programs, the kinescope recording was equivalent in effectiveness to the television session in 94 percent of the comparisons made. In the programs for the enlisted airmen, the kinescope recordings were indicated to be equivalent in effectiveness to the television sessions in 73 percent of the comparisons made. Kinescopes were as good as or better than teaching by local instructors in three-quarters of the comparisons made. Generalization of this finding should, however, be limited to recordings that retain the element of "freshness" or "timeliness." Because they were recordings of recent live programs, the kinescopes used in this study, were, perhaps given more favorable reception than might be accorded them at a much later date.

The principal problems that would be encountered in using television for rapid mass training are (a) those of procurement and training of personnel so that sound psychoeducational techniques may be utilized in planning and producing television lessons, (b) the procurement of physical equipment and the personnel to maintain it, and (c) acquisition or construction of distribution facilities.

8. Pasewark, W. R. The effectiveness of television as a medium of learning typewriting. (Abs.) Diss. Absts., 17:579, 1956.

The purpose of this study was to determine the effectiveness of television as a medium of learning beginning typewriting.

The effectiveness of students learning beginning typewriting through television in an Experimental Section was compared with students learning by conventional classroom methods in a Conventional Section. Students in the Experimental Section were matched by the individual pair method with similar students in the Conventional Section on the basis of American Council on Education Psychological Examination scores.

The Conventional and Experimental Sections followed the same course of study for 48 lessons of 50 minutes each, all of which were taught by the investigator. There were no instructors regularly assigned to the Experimental Section.

The findings revealed that telestudents typed significantly faster than conventional students on a timed writing test at the conclusion of the course. With regard to the pattern of learning, tele-students were generally superior to conventional students when comparing typewriting speed and accuracy on a series of nine timed writing tests throughout the course. It appears, however, that the pattern of learning for both sections tends to be similar. Conventional students had less mean errors than telestudents when comparing a production test consisting of the preparation of a tabulation and a personal business letter at the end of the course. The difference, however, was not statistically significant.

It was concluded that (1) Telestudents' typewriting performance on a timed writing test at the conclusion of the course was superior to the conventional students' performance on an identical test, (2) telestudents' pattern of learning to typewrite tended to be similar to conventional students' pattern of learning to typewrite, and (3) there is no significant difference in telestudents' and conventional students' ability to use typewriting skills to complete a production test at the end of the course.

The findings of this study lead to the general conclusion that television is an effective medium of learning beginning typewriting.

APPENDIX B

TABLE 1

* THE ADOPTION PROCESS AND SOURCES OF INFORMATION

Awareness Knows about it	Interest Develops interest, gathers general information and facts.	Evaluation Mental trial; application to personal situation. Can I do it?	Trial Small scale, experimental use. How to do it?	Adoption Large scale, continued use, satisfaction
1. Mass media (radio, TV, newspapers, magazines)	1. Mass	1. Neighbors and friends.	1. Neighbors and friends.	1. Neighbors and friends.
2. Gov. agencies (extension, vocational agriculture etc.	2. Gov. agencies	2. Gov. agencies	2. Gov. agencies	2. Gov. agencies
3. Neighbors and friends.	3. Neighbors and friends.	3. Mass media	3. Mass media	3. Mass media
4. Salesman dealers	4. Salesman deals	4. Salesman dealers	4. Salesman dealers	4. Salesman dealers

*From Report No. 18, Iowa State College, 1957

LITERATURE CITED

1. The Cooperative Extension Today: A Statement of Scope and Responsibility, Washington, D.C.: U.S.D.A., Federal Extension Service, April 1958,

2. Agricultural Census, 1960, Puerto Rico.

3. Hacia Una Vida Mejor: Informe Anual del Servicio de Extension Agricola de la Universidad de Puerto Rico, Rio Piedras: Servicio de Extension Agricola, U.P.R., 1960.

4. Lerner, Daniel, The Passing of Traditional Society. Illinois: Free Press, 1958, p. 55.

5. Berlo, David K., The Process of Communication. New York: Holt, Rinehart and Winston, 1960.

6. Lionberger, Herbert, Adoption of New Ideas and Practices. Ames, Iowa: The Iowa State University Press, 1960, p. 99.

7. Hovland, Karl I., Janis, Irving L. and Kelley, Harold B., (Eds.) Communication and Persuasion. New Haven: Yale University Press, 1953, p. 174.

8. Festinger, Leon, A Theory of Cognitive Dissonance. Evanston: Row, Peterson & Co., 1957.

9. Rokeach, Milton, The Open and Closed Mind. New York: Basic Book, Inc., 1960.

10. Janis, Irving L. & Field, Peter, "A Behavioral Assessment of Individual Differences" in Janis, Irving L. & Hovland, Karl I. (Eds.) Personality and Persuasibility. New Haven: Yale University Press, 1959, Vol. 2, p. 2.

11. Linton, Harriet & Graham, Elaine,"Personality Correlates of Persuasibility" in Janis, Irving L. & Hovland, Karl I. (Eds.) Personality and Persuasibility. New Haven: Yale University Press, 1959, Vol. 2, pp. 56-58.

12. Cohen, Arthur, "Need for Cognition and Order of Communication as Determinants of Opinion Change," in Hovland, Karl I., (Ed.) The Order of Presentation in Persuasion. New Haven: Yale University Press, 1957, pp. 13-21.

13. Janis, Irving L., "Intensive Interviews in Reactions to Fear Arousing Propaganda," in Hovland, Karl I., Janis, Irving L. and Kelley, Harold H., Communication and Persuasion. New Haven: Yale University Press, 1953, pp. 68-79.

14. Janis, Irving L. & Feshbach, L., "Effects of Fear Arousing Communications," J. of Abnorm. Soc. Psychol., 1953, 48, pp. 78-92.

15. Cohen, Arthur, "Some Implications of Self-Esteem for Social Influence," in Janis, Irving L. & Hovland, Karl I. (Eds.) Personality and Persuasibility. New Haven: Yale University Press, 1959, Vol. 2, pp. 101-105.

16. Janis, Irving L. & Feierabend, Rosalind, "Effects of Alternative Ways of Ordering Pro and Con Arguments in Persuasive Communication," in Hovland, Karl I. (Ed.) The Order of Presentation in Persuasion. New Haven: Yale University Press, 1957, pp. 115-123.

17. Hovland, Karl I. & Mandel, Wallace, "Is There a Law of Primacy in Persuasion?" In Hovland, Karl I., The Order of Presentation in Persuasion. New Haven: Yale University Press, 1957, pp. 13-21.

18. Schramm, Wilbur, "The Importance of the Group in the Communication Chain," in Schramm, Wilbur, (Ed.) The Process and Effects of Mass Communications. Urbana, Ill.: University of Illinois Press, 1954, pp. 359-362.

19. Greer, Scott A., Social Organization. New York: Random House, 1955.

20. Katz, Elihu & Lazarsfeld, Paul, Personal Influence. Glencoe, Ill.: Free Press, 1955.

21. Kelley, H. H. & Volkart, E. H., "The Resistance to Change of Group Anchored Attitudes," in Hovland, C. I., Janis, I. L. & Kelley, H. H., (Eds.) Communication and Persuasion. New Haven: Yale University Press, 1953, pp. 134-142.

22. Kelley, H. H., "Salience of Membership and Resistance to Change of Group Anchored Attitudes," American Sociological Review, Vol. 7, 1952, pp. 453-465.

23. Asch, Salomon E., "Effects of Group Pressure Upon Modification and Distortion of Judgments," in Maccoby, E. Newcomb, T. M. & Hartley, E. L. (Eds.) Readings in Social Psychology. New York: Henry Holt & Co., 1958, pp. 174-183.

24. Lewin, K., "Group Decision and Social Change," in Maccoby, E., Newcomb, T. & Hartley, E. L., (Eds.) Readings in Social Psychology. New York: Henry Holt & Co., 1958, pp. 187-211.

25. Lazarsfeld, P. & Gaudet, H., The People's Choice. New York: Columbia University Press, 1948.

26. Merton, R. K., "Patterns of Influence," in Lazarsfeld, P. & Stanton, F. (Eds.) Communications Research, 1948-1949. New York: Harper & Brothers, 1949, pp. 180-219.

27. Larsen, O. & Hill, R., "Mass Media and Interpersonal Communication in the Diffusion of News Events," Am. Soc. Review, Vol. 19, August, 1954, pp. 426-443.

28. Beal, G. M. & Bohlen, J. M., The Diffusion Process. Agr. Ext. Service, Iowa State College, Ames, Iowa: March 1957, J. R. No. 18, pp. 6.

29. Beal, G. M., "Information Sources in the Diffusion Process," The Research Clinic on Decision Making. State College of Washington, Pullman: Washington, August 1958, pp. 36-51.

30. Coop, J. H., Sill, H. L., and Brown, E. J., "The Function of Information Sources in The Farm Practice Adoption Process," Rural Sociology, 23, June 1958, pp. 146-157.

31. "Communication = Diffusion"? Agrisearch, Vol. 2, No. 11, N.P.A.C., East Lansing: Michigan State University, June, 1955.

32. "Wonder Where Your Message Went"? Agrisearch, Vol. 2, No. 10, N.P.A.C., East Lansing: Michigan State University, Oct., 1955.

33. "Where Do They Get Their Information"? Agrisearch, Vol. 1, No. 1 N.P.A.C., East Lansing: Michigan State University, June, 1955.

34. "A Look at Diffusion," Agrisearch, Vol. 1, No. 5, N.P.A.C., East Lansing: Michigan State University, Oct., 1955.

35. Bertrand, Alvin L.& Bates, Frederick L., Television in Rural Louisiana, Agricultural Experiment Station, Louisiana State University, No. 518, December, 1958.

36. Axinn, George, "Communication Habits of Delaware Farmers," Journalism Quarterly, Winter, 1953, pp. 74-75.

37. Crile, Lucinda, Reist, H. N. & Tait, Elton B., Extension Television in Lancaster and Lebanon Counties, Pa., USDA, Extension Service Circular No. 496, April, 1955, pp. 32.

38. Williams, L. R., "Vermont (Across the Fence) TV Survey," in Crile, Lucinda Educational Television Research Findings, Extension Service Circular No. 514, USDA, Nov., 1957, p. 6.

39. Sloan, J. T., "Farm and Home Television Viewing Habits and Preferences of Caldwell County Residents in 1955," in Crile, Lucinda, Educational Television Research Findings, Extension Service Circular, No. 514, USDA, Nov., 1957, p. 6.

40. Kumata, Hideya, Instructional Television: An Inventory. Urbana, Ill.: 1956.

41. Crile, Lucinda, Educational Television Research Findings, Extension Service Circular, No. 514, USDA, Nov., 1957.

42. Barrow, Lionel C. & Westley, Bruce H., Television Effects, Madison: University of Wisconsin Television Laboratory, 1958.

43. Wilson, Meredith C. & Moe, Edward O., Effectiveness of Television in Teaching Sewing Practices, USDA, Extension Service Circular, No. 466, June, 1951, pp. 35.

44. Gauger, C. J., "Evaluation of Results of the Corn Production Television Program in Story County," in Crile, Lucinda, Educational Television Research Findings, Ext. Serv. Circ. No. 514, USDA, Nov., 1957, p. 18.

45. Pollack, J. & Melache, G., "The Effectiveness of Television in Teaching Tailoring a Coat," in Crile, Lucinda, Op. Cit., p. 17.

46. Merrill, I. R., "Town and Country" Program Analysis, Spring, 1955, MSU WKAR-TV Res. Rpt. 552 M, East Lansing: Michigan State University, 1955, p. 25.

47. Speece, Maynard A., Skelsey, Alice F. & Gapen, Kenneth M., Program Methods: A Report on USDA Television Research Project, Radio & television Service, Office of Information, USDA, Feb., 1953.

48. Veeder, James P., TV Handbook for Extension Workers, Cornell University, Dept. of Extension Teaching and Information, Sept., 1953.

49. Tomkin, Joseph D. & Skelsey, Alice F., Television For You: A Handbook For Extension Agents, USDA, Agricultural Handbook No. 55, 1953.