

A COMPARISON OF THE EFFECTIVENESS OF FACE-TO-FACE
AND REMOTE TEACHING IN COMMUNICATING
EDUCATIONAL INFORMATION TO ADULTS

by

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A MASTER'S THESIS

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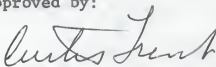
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AUTOBIOGRAPHY

The writer was born in Axtell, Kansas April 29, 1925. She received her elementary education in Axtell and graduated from Axtell High School. She graduated from Highland Junior College and received her Bachelor of Arts Degree from the University of Kansas in 1947.

Her professional experience has consisted of the following: three years as Home Economics teacher in Sublette, Kansas; one year as Home Economics teacher in Effingham, Kansas; one year Home Economics teacher in Sublette, Kansas; two years Home Economics Agent in Haskell County, Kansas; and since May, 1962, Home Economics Agent in Reno County, Kansas.

The author married Dwayne Blackwood of Sublette, Kansas in August, 1948. He died in December, 1957. The family now includes Deborah Louise, age seventeen, David Lynn, age fifteen and Derrell Dean, age ten.

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TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Purpose	1
Background and Need for the Study . . .	1
Statement of Objectives	4
Statement of Hypotheses	4
Definition of Terms	5
Theoretical Orientation	6
Scope and Procedure	10
Limitations	16
II. REVIEW OF LITERATURE	18
Introduction	18
The Role of Tele-lecture in Adult Education	20
III. A COMPARISON OF THE EFFECTIVENESS OF FACE-TO-FACE AND REMOTE TEACHING IN COMMUNICATING EDUCATIONAL INFORMATION TO ADULTS	32
Introduction	32
Analysis of Data	33
IV. SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH . .	54
Introduction	54
Summary and Conclusions	55

CHAPTER	PAGE
Implications	60
Recommendations for Further Research .	62
BIBLIOGRAPHY	64
APPENDIX	67

LIST OF TABLES

TABLE	PAGE
I. Number of Participants, by Time and Technique	13
II. Mean Score Data	34
III. Remote Lecture Technique	35
IV. Mean Scores of Face-to-Face and Remote Lecture Techniques Combined	39
V. Correlation Data of Remote and Face-to-Face Lecture Techniques	40

LIST OF FIGURES

FIGURE	PAGE
A. Amount of Learning Shown by the Difference Between Post-Test and Pre-Test Mean Scores by the Lecture Technique	43
B. A Comparison of the Mean Scores of the Combined Two Lecture Techniques, Face-to- Face and Remote, by Age Groups	43
C. A Comparison of the Mean Scores of the Participants in the Remote Lecture Tech- nique by Age Groups	44
D. A Comparison of the Mean Scores of the Par- ticipants in the Face-to-Face Lecture Technique by Age Groups	44
E. A Comparison of the Amount of Learning as Shown by the Mean Difference Between Pre- Test and Post-Test Scores of Participants of the Combined Lecture Techniques by Age Groups	46
F. A Comparison of the Mean Scores of the Par- ticipants of the Combined Lecture Tech- niques by Educational Level	46
G. A Comparison of the Mean Scores of the Par- ticipants of the Remote and Face-to-Face Lecture Techniques by Time	49

FIGURE

PAGE

H. A Comparison of the Attitude Mean Scores of the Participants of the Remote and Face-to-Face Lecture Techniques by Age Groups .	49
I. A Comparison of the Attitude Value Mean Scores of the Participants of the Combined Lecture Techniques by Educational Level . .	51
J. A Comparison of the Attitude Value Mean Scores of the Participants of the Face-to-Face and the Remote Lecture Techniques by Time of Day	51
K. A Comparison of the Attitude Value Mean Scores of the Participants of the Combined Lecture Techniques by Age Groups	52

CHAPTER I

INTRODUCTION

Purpose

The purpose of this study was to determine the relative effectiveness of two teaching techniques (face-to-face and remote teaching) in communicating educational information to adults as indicated by immediate recall of the information presented.

Background and Need For the Study

The Cooperative Extension Service maintains an educational program in more than 3,000 counties in all the fifty states and in Puerto Rico.¹ In 1967, in the state of Kansas 7,503 meetings were held to train 177,590 local leaders. There were 21,783 other meetings held at which extension workers presented information.² The project areas covered by extension workers are: Agricultural Production, Management and Natural Resource Development; Marketing and

¹Glenn M. Busset, "A Comparison of Knowledge Gained by Adults When Presentations are Followed by Discussion Led By Local Volunteer and Professional Leaders With A Positive Or A Negative Attitude Toward the Discussion Task" (unpublished Ph. D. thesis, the University of Wisconsin, 1964), p. 2.

²1967 Annual Statistical Report of State and County Extension Workers, A Report Prepared by the Director of Extension, Kansas (Kansas, January 24, 1968), p. 2.

Utilization of Farm Products; Home Economics; 4-H Youth Development; and Resource Development and Public Affairs.

With so many areas to be covered, the average county Extension worker finds many demands on his time. To do a creditable job of presenting information at an educational meeting, a great deal of preparation is imperative. Traditionally, specialists from the university travel to an area in the district to train several county extension staff members. The county workers return to their counties and in turn, train local people. The idea behind this procedure is excellent. The specialist has time to present his material and the agent returns to his county prepared to teach. In actuality, what happens is; the agent returns to his county but his training session may be scheduled several months away, the material is filed away until the meeting time approaches and other pressing problems are given priority. The scheduled meeting approaches and much time is then spent reviewing the material, adding to it for timeliness to fit the local situation, and preparing the visuals.

A considerable amount of time spent in the preparation for one presentation could be saved by the use of a specialist and a remote teaching device. The specialist could remain at the university, saving travel time and expense. Sets of visuals which duplicate the ones the specialist uses for the lecture could be sent to the County Extension Home Economist

to be placed before the audience at the direction of the specialist. A lecture by phone could be received in several counties at the same time, reaching many different groups of people.

Variety in methods has interest value. Extension educators need to present information in a variety of ways to attract the interest of their cooperators.

Many informal meetings are held by the Cooperative Extension Service. Continued participation in these voluntarily attended meetings is dependent upon the satisfaction or rewards the audience feels it receives from taking the time and effort to attend the meetings. The extension educational teaching methods need to improve to keep pace in a rapidly changing era of knowledge and communications.

Remote teaching via tele-lecture was used in two hundred and fifty universities last year. Medical doctors in Wisconsin are using the tele-lecture method (with live lectures by specialists being taped) with ten hospitals receiving the lecture each week.³ Colleges in Kentucky, forty-five miles apart, are sharing teaching sisters. Engineers in Grand Rapids, Michigan took a ten-week accredited graduate course from Michigan State University, East Lansing,

³"Innovation: Tele-lecture plus Information Retrieval plus Compresses Speech," Information sheet published by Bell Telephone.

ninety miles away.⁴

Remote teaching has proved successful for others. Perhaps it will become a new educational teaching technique for Extension.

Statement of Objectives

The objectives of the study were:

1. To determine if there is a significant difference in the amount of learning that takes place when educational information is presented to an adult audience through face-to-face and remote teaching techniques.

2. To determine if there are associations between the amount of learning that takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as:

- a. age
- b. level of education
- c. time of day
- d. attitude.

Statement of Hypotheses

The following hypotheses were developed to serve as guides to the collection and analysis of the data:

⁴"Innovation: Tele-lecture plus Telewriting," Information sheet published by Bell Telephone.

1. There is no significant difference in the amount of learning which takes place when educational information is presented to an adult audience by means of face-to-face and remote teaching techniques.

2. There are no associations between the amount of learning which takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as:

- a. age
- b. level of education
- c. time of day
- d. attitude.

Definition of Terms

Exact definition is required of certain words and terms to clarify meanings for the writer and reader.

Attention. Attention refers to the application of the mind to any object or thought.

Audience. Audience refers to the adults who attended the lectures. Adults in this study were persons eighteen years of age or older.

Immediate recall. Immediate recall refers to the amount of learning or the information retained as measured by

a completion examination immediately following the presentation of the lectures.

Interest. Interest refers to the degree to which there is a feeling of attentive curiosity, sympathy, or desire to understand or learn.

Participants. Participants refers to the adults who took part in the study and completed a paper and pencil examination before and after the lectures.

Tele-lecture. Tele-lecture was the remote teaching device used in this study. The lecturer speaks to the audience by means of a telephone call. His voice is amplified over loudspeakers and facilities usually are available which enable members of the audience to talk directly with him.

Visual aid. Visual aid refers to a prepared visual image designed to teach by making use of the sense of sight.

Theoretical Orientation

The theoretical framework for this study was based on the S-M-C-R Model developed by Berlo.⁵

⁵Erwin P. Bettinghaus, "The S-M-C-R Model of Communication," Research, Principles, and Practices in Visual Communication, Published as a part of the Communication Training Program developed by the National Project in Agricultural Communication for the American Association of Land-Grant Colleges and State Universities, 1960, p. 29.

The whole process of delivering the message and for the information to be received and decoded is basically the process of communication. The S-M-C-R Model emphasizes the psychological nature of communication as it affects the source and the receiver as well as an analysis of messages and of sensory channels.

The source. All communication involves a source of information. In the lecture situation the source is the speaker talking to an audience.

The S-M-C-R Model provides a minimum of variables which are applicable to the lecture situation.

The communication skills of the source are important factors in determining the success of the communication. The ability to draw, write, and reason differ with the source and with his ability to communicate to the audience. Highly developed communication skills generally result in more effective communication.

Erwin P. Bettinghaus⁶ in his discussion of communication explains the attitude of the source is important to the success of the communication. His attitude toward the subject about which he is communicating is of direct relation to the success of the lecture.

The knowledge of the source is important. The ease

⁶Ibid., p. 29.

of handling a familiar subject is quite different from a new and unfamiliar subject.

The message. The message is the information sent from the source to the receiver, or in the situation of the lecture, from the lecturer to the audience.

All messages involve some code. It may be the language, or the technical words, or a special meaning or understanding of word usage. For the receiver to complete the communication he must be able to decode the message.

The content of the message involves the ideas within the message. The source of the lecture needs to select content of his material that will be appropriate to his audience.

The channel. The channel refers to the means or the vehicle by which the message is carried. In this study the face-to-face and the remote lecture are the channels by which the message is carried to the receiver, or the audience.

The receiver. When the message is sent it must be received for communication to have taken place. People serve both as sources and receivers of communication. In the lecture situation facial expressions and verbal communication often cause an exchange of position of source and receiver positions.

Bettinghaus⁷ feels the attitude of the receiver is important to the effectiveness of the communication. If the receiver has a negative attitude toward the source or the subject then a psychological barrier exists to his receiving the benefits of the communication. The closer the attitude of the source and the attitude of the receiver, the more effective will be the communication.

The knowledge of the receiver is important in the lecture situation. If the receiver is familiar with the subject he reacts differently from a situation with which he is unfamiliar. This is why it is important for the lecturer to be somewhat familiar with the background of the audience.

The communication skills of the receiver may affect the success of the communication. His ability to decode, read, listen, write and reason determine the effectiveness of the communication to him. Highly developed communication skills of the receiver generally result in the more effective communication.

The effectiveness of communication may depend upon any one or all of these channels operating efficiently. It is the premise of this study that communication may be carried out just as effectively by remote means as the face-to-face contact if the communication process is complete.

⁷Ibid., p. 31.

Scope and Procedure

The study was conducted in Reno County Kansas. A letter was sent to all fourteen hundred Extension Homemaker Unit Members in Reno County informing them of a short course on "Money Management" to be conducted by University Extension Specialists and inviting them to attend. An enrollment card was enclosed to give them a convenient means of replying if they were interested. One hundred and six women responded by returning the cards. Copies of the letter and the fly sheet brochure are included in the Appendix.

Two alternative times were listed for the lectures, one in the morning and one in the afternoon. Thirty-eight Unit members completed the morning lecture and thirty-three completed the afternoon lecture.

The following instructions were given to those in attendance before each of the lectures.

I want to thank all of you for taking time to attend this short course. I know you will be well rewarded by any informative lesson given by our two Extension area specialists.

I am in my second semester of Kansas State University and have one more semester to go. My research is concerned with a remote method of teaching called Tele-lecture.

I would like to introduce Dorothy Neufeld, District Extension Specialist in Home Management, and Norma Redeker, District Extension Specialist in Home Management.

The lesson will be divided into two parts, the first will be presented by Norma, the second by Dorothy Neufeld.

I would like to introduce my professor, Dr. Curtis Trent, Coordinator of Extension Personnel Training. He is working with me on this study. Mr. Kenneth Palmer, of the Bell Telephone Company is assisting with the telephone equipment.

Part of my study is a comparison of methods of teaching. I will appreciate your cooperation on it. We feel it will be valuable to all of us in the future. Tele-lecture refers to an audio-visual teaching system. The lecturer speaks to the audience by means of a telephone call. His voice is amplified over loudspeakers and facilities are usually available which enables members of the audience to talk directly with him.

We would like to have you fill out these sheets before we have the lecture. Will you please fill out the answers to the questions. There will be ten minutes to write in the answers you know. Please put your name on the sheet, this is for classifying the information only and all the pages will be destroyed after the numbers are recorded.

The information sheets and the pre-test questionnaire were handed out and completed by the participants. The following instructions were given:

We will select, randomly, those to participate in the remote lecture. One group will remain in this room, the other group will go for the next lecture to the Ark Valley Meeting Room across the street. We have a car to take anyone who would like a ride.

The two groups divided and coffee was served to each section before the lecture started. Mrs. Neufeld gave the introduction to the face-to-face group before she began talking to the remote lecture group. The writer introduced the remote lecture in this way:

This group is now ready for the lecture. Dorothy, are you ready there? (She answered in the affirmative.) This group will be listening to Dorothy lecture as she presents the same information to group I. You will see

the exact same visuals they will see. Please listen carefully to Dorothy.

The two groups heard the lecture, then they were instructed as follows:

Now would you please fill out these questionnaires and write in the answers you remember from the lecture. Remember to put in your name. Also included is an evaluation of just this part of the meeting. Please fill them out in terms of what you have heard and the method as it was presented.

The post-test and evaluation sheets were then completed and collected.

The A.M. and the P.M. lectures were conducted in as nearly the same manner as possible.

The data gathering instrument used in the study was a questionnaire developed by the writer with the guidance of the specialist lecturer, Dorothy Neufeld. The objectives of her lecture were studied and the questions were developed from these objectives. The questionnaire, among other things, was designed to measure the amount of information gained from hearing the lecture. The participants were asked to complete the ten item examination both before and after the lecture. A value of ten points was given for each item answered correctly. A total score of 100 was possible.

The number of participants are shown in Table I.

The data from the two groups of participants were collected at the time of the lectures, May 1, 1968. The pre-test and the information sheets were filled out before

the lecture and the post-test and the evaluation scale were completed following the lecture.

TABLE I
NUMBER OF PARTICIPANTS, BY TIME AND TECHNIQUE

Time	Technique	Participants
A.M.	Face-to-face	18
	Remote	20
P.M.	Face-to-face	16
	Remote	17
Total		71

The participants included all attending the lectures.

The sample used in the study was composed of seventy-one people of varying age and educational levels. All were members of Extension Homemakers Units in Reno County, Kansas.

The sample was randomly divided into an experimental and a control group.

A standard illustrated lecture was presented by a specialist to the control group.

The experimental group received the same lecture by the same specialist simultaneously via telephone line.

Pre-tests were given to all the participants to determine the level of knowledge possessed before the subject matter was presented. At the same time the pre-test was given a sheet was given to each participant to fill out with information concerning her age and educational level.

The data collection instrument was prepared and pre-tested with graduate students at Kansas State University. The evaluation scale was tested with this class also, but only with the remote technique group. Following the lecture when criticisms were requested, one suggestion was that all the lecture participants be allowed to evaluate the method used. This suggestion was followed.

The questions were scored by the writer. Charts were made to show the scores of both groups.

Copies of the questionnaire and the evaluation sheet are included in the Appendix. Yellow colored paper was used for the pre-test and green colored paper was used for the post-test.

The face-to-face lecture was given, and at the same time the remote lecture was held, with the voice of the lecture being carried over a telephone line to the group in a building across the street. Two sets of identical visual aids were used, one by the lecturer as she talked, and the other was put in place at the appropriate time by the writer. (See Illustration A.)

The post-test and the evaluation scale were given to all the participants to measure the amount of immediate recall. The difference between the scores of the pre-test and the post-test was used to determine the amount of learning which took place. An evaluation scale of the



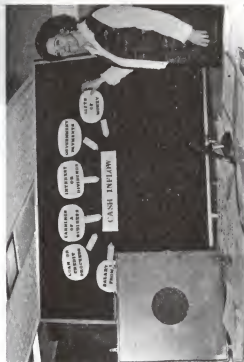
Bell Telephone equipment used to bring the lecturer to the audience by means of a telephone call.



Writer instructing both lecture groups before administering pre-test.



Dorothy Neufeld, Extension Specialist, presenting lecture, while transmitting audio portion to experimental group.



Writer placing visuals on flannel board as the lecture is received by experimental group via telephone.

ILLUSTRATION A

Thurston-Chave type was used to determine the attitude of the participants toward the techniques of presentation. The scale was developed by Russell Kropp and Coolie Verner⁸ to measure the over all reaction to a program and also to measure and compare participant satisfaction of one type of process against another. The scale was used with the face-to-face lecture group and the remote lecture group to measure their satisfaction with the technique of the lecture which they attended.

The data were punched on IBM cards, programmed for computer analysis and are presented by means of tables, charts and graphs.

Statistical measurers used included coefficient of correlation and the t test.

The data were analyzed in terms of the null hypotheses established for the study.

A sample was assumed as all individuals within the population studied were given an opportunity to participate.

Limitations

The study was limited to a sample of Extension Home-maker Unit members in Reno County, Kansas. The findings cannot be generalized beyond the population studied.

⁸ Russell P. Kropp, and Coolie Verner, "An Attitude Scale Technique For Evaluating Meetings," Adult Education (Vol. VII, No. 4, Summer, 1957), pp. 212-215.

It is possible that high attitude scores, under both techniques, could have been influenced by the personal relationship the audience felt toward the writer.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The literature was reviewed to see what research had been done in the area of remote teaching via tele-lecture. Many sources of information on the use of tele-lecture in academic situations were found.

In California, explicit, up-to-date information was given on the latest development in nursing education by the use of tele-lecture to Mrs. Elizabeth Regan, Asst. Professor and Co-Chairman of Nursing Extension by Dean Paul Sheats of The University of California at Los Angeles. Within 45 minutes, three world renowned experts were brought to the faculty of the University of Wisconsin in a two-way conversation via the tele-lecture. The equipment used was easily installed for a nominal fee. Other expense was the price of a speaker plus the long distance telephone charge.¹

Outstanding people in their fields now can be reached easily for current information. Experts can expound on their latest writings, with the aid of tele-lecture. Distinguished guest speakers can remain seated at their own desks and lecture audiences any number of miles away. To be most

¹Roger W. Axford, "Visiting Professors Who Never Left Home," Adult Leader, X (March, 1962), p. 255.

effective, materials can be sent in advance by the lecturer, and charts and graphs can be projected on the screen from slide projectors and referred to by the expert. Audiences can visit with supreme court justices, government officials, and university scholars by tele-lecture. It is possible for groups of students to have "visiting professors" who never leave home.²

The continuous study of the relative effectiveness of a variety of processes in varying situations with differing groups of adults is one of the most pressing needs of adult education.³

There is little valid scientific basis upon which the practicing adult educator can make wise choices among the variety of communication processes available for effective teaching. Some progress in this area is being made, but many of the studies fail to draw precise distinctions among the processes studied or to measure effectiveness in any definite way. The adoption research under way by rural sociologists has contributed greatly to an understanding of the educational processes, but has neglected the processes.⁴

²Ibid.

³Edmund deS. Brunner and others, An Overview of Adult Research (Chicago: Adult Education Association, 1959), pp. 142-162.

⁴John M. Welch and Coolie Verner, "A Study of Two Methods for The Diffusion of Knowledge," Adult Education, XII, No. 4 (Summer, 1962), p. 231.

The Role of Tele-lecture in Adult Education

What role can tele-lecture play in adult education? Is it really needed, or is it just a new method of instruction being tried for the sake of using something new? How effective has tele-lecture proved to be in actual situations? What are the results of research using tele-lecture? How are audiences accepting the tele-lecture technique? These questions will have to be answered to the satisfaction of educators before an effective use of tele-lecture will be made.

The writer feels some of the problems confronting adult education groups are; the cost of obtaining pertinent speakers at the correct time when learning is at its peak in a specific situation, as well as the availability of the resource person when needed. New problems arise in using tele-lecture too, such as the cost of renting the equipment, availability of telephone lines and the acceptability of the technique by the audience.

Many teaching methods are being used by educators to increase learning by making more effective use of various media in the classroom situation. Included in these media are field trips recorded on film and on tape, motion pictures, television, tapes, and other audio-visual aids.

A new concept in communications has been developed which has proven to be a convenient and low-cost technique

for reaching groups of students and for overcoming the problems of distance and time. This technique brings the lecture to the audience by means of a telephone call. It is called Tele-lecture.⁵

Tele-lecture is a method of presenting speakers situated in one location to assembled groups in another location. The lecturer's words and those of the moderator are amplified for the benefit of the audience. The unique feature is the opportunity to ask questions of the speaker and to receive an immediate and spontaneous reply. The technique is flexible and can be adapted to serve a variety of situations and needs.⁶

Tele-lecture can be set up wherever there are telephone facilities. Lectures can be made from a university classroom or from a factory or from any place. The lecturers have the convenience of being able to deliver their message without losing time for traveling to the lecture site.

A study was conducted by Boswell, Mocker and Hamlin⁷ dealing with the basic question of whether or not remote

⁵Tele-lecture, publication of The Bell Telephone System. Printed in U. S. A., SP 85, October, 1963, p. 3.

⁶Thomas G. Cook, "Tele-lecture," Adult Leadership, May, 1963, p. 11.

⁷John J. Boswell, Donald W. Mocker and William C. Hamlin, "Telelecture: An Experiment in Remote Teaching," Adult Leadership, March, 1968, p. 321.

teaching can produce results comparable with those observed on the home campus following traditional lecture methods. They found that remote teaching technique may be a valid aid to teaching and it showed itself to be an economical vehicle for educating adults in remote areas of the State.

The information explosion of the last two decades has forced those responsible for information and learning in education, civic affairs, business and the professions to find new ways to broaden and supplement their resources.

The increasing need for adult education in the United States has placed new demands on the staff and the facilities of educational institutions. Many adults continue their education beyond the traditional 18-22 age bracket, but live and work in communities remote from the campus setting. An active Extension Service has developed over the years to carry out this kind of service.⁸

The University of Missouri at St. Louis has begun a program of research to determine how its off campus instruction can be handled most effectively. The research is directed towards the allocation of resources, people as well as equipment, to produce effective teaching-learning environment on the off campus situation. Because of the time and expense of professors travel the research started using the

⁸Ibid., p. 321.

tele-lecture method.⁹

In the study "Telecture: An Experiment in Remote Teaching" the researchers felt a measure of live contact was vital because factors of attitudes, values and habits of scholarship are as essential as facts and figures in the educational process. This contact was established by the teacher traveling to the remote setting for one class out of five, or by use of a teaching assistant.¹⁰

The main dependent variable in this study was test score. The result from both pre-test and post-test scores showed there was no significant difference in the content knowledge among the groups, and no difference among the groups after training. A teacher evaluation showed no overall difference in the students attitude toward the content of toward the presentation method.¹¹

A presentation by Carl B. Snow, director of Audio-visual Center, in Western Michigan University and Charles F. Madden, coordinator of Telephone Lecture Project, and head of the Department of English at Stephens College, gave alternate resources for students when the original source is unavailable. These resources included closed circuit TV channels and amplified telephones in the classrooms. It was felt that photos of the speaker and a sequence of slides

⁹Ibid., p. 321.

¹⁰Ibid., p. 321.

¹¹Ibid., p. 322.

proved effective in adding variety to the presentation.¹²

The number of miles distant need not be a factor in planning educational programs. A speaker might be quite close but already engaged to speak on the same subject of interest to the educational group. The procedure has been used in the Topeka High Schools in classrooms in three different schools where classes were taught by one instructor. Commenting on his experience with the system, teacher Jack Pringle said,

It takes a little getting used to teaching this way. At first you miss the student-teacher eye contact and you have to speak more slowly. However, this is offset when you realize your ability to reach students has been tripled.¹³

Kansas State University provided the science lectures that were used in the Topeka schools. The lectures originated from a specially equipped classroom on the campus. They were directed by John Chalmers, Dean of the College of Arts and Sciences, and William Stamey, Associate Dean.

A study was conducted in Indiana to determine if there was a difference in the amount of recall between a tele-lecture and a face-to-face lecture, and the acceptability of

¹²"Visuals For Telelecture and Campus Audio Networks," Audiovisual Instruction, June-July, 1965, Vol. X, No. 6, p. 468.

¹³"Teaching by Telephone," Audiovisual Instruction, September, 1967, Vol. XII, No. 7, p. 683.

the techniques. The results showed there was no significant difference in amount of recall from the two methods of teaching. The audience of the tele-lecture thought they could learn more from a traditional lecture, but the evidence did not bear this out.¹⁴

A pilot study on tele-lecture begun in 1967 at Wisconsin State University shows the use and application for individualized in-service education is without limit. One of their objectives was to make available to local staff members, in a small group, the resources of a neighboring university. Another objective of the study was to define the role of college's responsibility in keeping the teachers informed. The teachers themselves could in turn stay up to date on new teaching devices and instructional equipment.¹⁵

A use of Telephone Hook-up that could be applicable to adult education groups was tried in Wisconsin when school officials in twenty locations in the state were able to communicate with each other for two hours during an evening conference. Representatives from over one hundred school districts participated in the telephone conference. Each of

¹⁴H. L. Ewbank, Jr., and E. E. Baker, "Tele-Lecture or Traditional Lecture," Journal of Cooperative Extension, Spring, 1968, p. 46.

¹⁵"Innovations Bolster In-Service Programs," Wisconsin Journal of Education, Vol. C, No. 3, November, 1967, p. 18.

the conference rooms was equipped with a loudspeaker and telephone handset. The objective of the program was to discuss recent significant legislative developments affecting public education and the current status of state-wide salary negotiations. The participants unanimously agreed that additional statewide telephone conferences should be scheduled.¹⁶

Coolie and Verner and Gary Dickinson from the University of British Columbia, did a study on "The Lecture". They concluded the term lecture is used indiscriminately in adult education to designate both a technique and a method.¹⁷ They examined a number of studies where remote method lectures were as effective as the lectures heard direct. A study by Jersilt¹⁸ says the material presented at the beginning of the lecture was remembered better on immediate recall than the information presented in the middle or at the end. A study by Carver¹⁹ shows the higher the cultural level of the student the greater is his ability to profit from the lecture. Hildebrandt and Stevens²⁰ indicate reading a lecture from notes is not as effective as speaking

¹⁶"Wisconsin Telephone Hook-Up," School Board Journal, March, 1968, p. 20.

¹⁷Coolie Verner and Gary Dickinson, "The Lecture, An Analysis and Review of Research," Adult Education, Winter, 1967, Vol. XVII, No. 2, p. 85.

¹⁸Ibid., p. 87.

¹⁹Ibid.

²⁰Ibid., p. 88.

extemporaneously. Woolbert²¹ says a conversational delivery is more effective than a dynamic delivery, and it is desirable to have changes in intensity, time, pitch, and timbre in delivery. Cantril and Allport²² found the rate of delivery should range from 115 to 160 words per minute. Simple material will be lost if the delivery is too slow and complex material will be lost if delivery is too fast. Verner and Dickinson conclude with these basic guidelines to the selection of the lecture as a method of presentation:

1. When the basic instructional task involves the dissemination of information;
2. When the information to be imparted is nowhere else available;
3. When a segment of content material must be organized and presented in a particular way for a specific group;
4. When the establishment of learner interest in a subject is an indispensable aspect of the learning objective;
5. When the content material presented is needed only for short-term retention; and
6. When introducing an area of content or providing oral directions for learning tasks that will be pursued and developed through some other process.

On the other hand, the evidence clearly indicates that the lecture is not an appropriate technique:

1. When the instructional objective involves any form of learning other than the acquisition of information;
2. When the instructional objective involves the application of skills or information;
3. When the learning task involves the initiation or alteration of attitudes, values, or behavior;
4. When the information acquired must be available through long-term retention;
5. When the content material is complex, detailed, or abstract;

²¹Ibid.

²²Ibid.

6. When learner participation in the learning activity is crucial to the achievement of the objective;
7. When the instructional objective requires the analysis, synthesis, or integration of the material acquired; or,
8. When the intelligence level and educational experience of the learners are average or below.

If the instructional objective clearly indicates the lecture to be the appropriate technique, it can be enhanced by insuring that:

1. The number of major points presented is not excessive;
2. Summaries are presented at the beginning and at the end;
3. The material presented is meaningful to the learner;
4. Verbal illustrations used to establish meaningfulness coincide with the experience of the learner;
5. The length of the presentation does not exceed thirty minutes;
6. The sentences are short and the language and style are simple;
7. The speed of delivery is adjusted to the complexity of the material and the experience of the learner; and finally,
8. The lecture is augmented by instructional devices and/or techniques which provide for learner participation.²³

The University of Omaha compared the price of an important speaker to speak in person with the charge for a tele-lecture. He would charge \$500 to \$1,000 for a live presentation, but would give the Tele-lecture for \$100 to \$200.²⁴

There is a monthly rental fee for the equipment for the Tele-lecture, so with an arrangement using an existing Watts line system, and a schedule of calls to different

²³Verner and Dickinson, op. cit., p. 94-95.

²⁴Cook, op. cit., p. 11.

counties by the different specialists, the cost of a series of lectures would be very low.

Tele-lecture could supplement field trips. A combination of projection equipment, printed material, and amplified telephone equipment termed, multimedia, was used by the College of Agriculture faculty members of the University of Illinois. The site was an advanced farm technology exhibit over one hundred miles away, and with a class of over one hundred students. The combination of instructional media into one system resulted in a more systematic and lucid presentation of the operation under study. Travel time was saved for both the students and the faculty, students did not miss other classes, student cost was reduced, viewing was unobstructed, and attention is constantly directed. Added benefits were--the program could be easily updated and for the price of the phone call could be repeated, and in the case of the farm exhibit the danger of transmitting disease from location to location was eliminated.²⁵

Some disadvantages of the Tele-lecture might be; the attitude of the people who believe more could have been learned from the traditional method.²⁶

²⁵John H. Behrens, "Multimedia Field Trip Replacements," Audiovisual Instruction, September, 1967, p. 715.

²⁶Ewbank, op. cit., p. 49.

The "teaching moment" might be lost. A lecturer normally watches for a visible reaction, e.g., positive by nodding heads and "ah ha" expressions, or the bland stare of noncomprehension. When the instructor recognizes the limiting factor he will try to establish a different type of rapport with the class, also the para-professional, or teaching assistant, watches for this lack of knowledge and communicates with the lecturer.²⁷

The tele-lecture method presents a new challenge to Extension workers. It is a flexible, inexpensive educational tool. "It can give every student the opportunity of contact with the greatest teachers and minds in the nations."²⁸

The findings suggest that the remote method of teaching may be a valid aid to instruction, and it showed tele-lecture to be an economical vehicle for educating adults in remote areas.²⁹

We can now tap the best brains in the world for current information and experts can expound on their latest writings through tele-lecture. Students can make preparations in advance for the tele-lecture presentation so they will have

²⁷ Boswell, op. cit., p. 322.

²⁸ Ciel Christiana, "Long Distance Lectures Bring Experts To The Classroom," New York State Edition, November, 1963, p. 16.

²⁹ Boswell, op. cit., p. 322.

the proper background for the information. The lecturer can send materials in advance such as slides, charts, graphs and other visuals and refer to them as he speaks. We now have the advantage of visiting professors who never leave home.³⁰

³⁰Roger W. Axford, "Visiting Professors Who Never Left Home," Adult Leadership, March, 1962, p. 255.

CHAPTER III

A COMPARISON OF THE EFFECTIVENESS OF FACE-TO-FACE AND REMOTE TEACHING IN COMMUNICATING EDUCATIONAL INFORMATION TO ADULTS

Introduction

The purpose of this study was to compare the relative effectiveness of face-to-face with remote teaching in communicating educational information to adults.

The specific objectives were as follows:

1. To determine if there is a significant difference in the amount of learning that takes place when educational information is presented to an adult audience through face-to-face and remote teaching techniques.

2. To determine if there are associations between the amount of learning that takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as:

- a. age
- b. level of education
- c. time of day
- d. attitude.

The data are presented and analyzed in this chapter in relation to the two hypotheses established for the study.

The basic statistical techniques used included the

t test and coefficient of correlation.

Analysis of Data

Hypothesis I

There is no significant difference in the amount of learning which takes place when educational information is presented to an adult audience by means of face-to-face and remote teaching techniques.

The sample of seventy-one participants included in the study was divided randomly into two groups--an experimental and a control group. A pre-test was administered to both groups to determine the level of knowledge of the subject to be discussed.

The mean scores of the two groups on the pre-test were almost identical as shown in Table II. The mean score for the experimental group was 28.108 and the mean score for the control group was 29.705. The t test showed that there was no significant difference in the level of knowledge of the two groups, thus leading the writer to conclude that the two groups were equally matched. Table III contains data from the two experiments. Table IV shows the mean scores of the participants under the two teaching situations. Table V shows the correlation data of the two lecture techniques.

The lecture was presented to the control group by an Extension Specialist through face-to-face contact and the

message was transmitted simultaneously to the experimental group located in another building via telephone line. It was explained to the audiences that questions could be asked and answered following the post-test in order to control this factor.

TABLE II
MEAN SCORE DATA

	Remote	Face-to-face	Combined Techniques
Age	4.783	4.676	4.732
Education	3.027	3.352	3.183
Time	1.459	1.470	1.464
Pre-test score	28.108	29.705	28.873
Post-test score	55.405	57.058	56.197
Difference	27.297	27.352	27.323
Attitude	3.353	3.334	3.344

At the conclusion of the lecture a post-test was administered to both groups to determine the level of accumulated knowledge about the topic discussed.

The mean post-test scores of both groups were considerably higher than the pre-test scores. The results are shown and compared in Fig. A. The difference in the mean post-test scores for the two groups was not significant at the five per cent level as determined by the t test.

TABLE III

REMOTE LECTURE TECHNIQUE

Time	Resp. No.	Age Group				Education Level				Pre-test	Post-test	Diff.	Attitude
		18-24	25-34	35-44	45-65	65+	-8	-HS	-C	C	C+		
A.M.	1					X	X				20	40	2.98
	3					X		X			30	50	2.79
	5					X		X			20	50	3.41
	7				X						30	60	3.27
	8				X						10	60	2.63
	9				X				X		30	50	2.51
	11				X			X			30	50	4.18
	12				X						30	60	3.74
	15				X		X	X			30	50	4.44
	16				X			X			30	40	3.00
	17				X			X			10	50	2.68
	20				X				X		40	60	3.53
	21				X		X				40	50	3.92
	23				X						20	60	2.55
	27				X			X			30	60	3.60
	29				X			X			20	50	2.61
	30			X					X		20	60	3.39
	33			X				X			20	50	2.96
	36			X				X			20	50	2.82
	38			X				X			20	80	2.80
Sub													
Total	20	1	0	2	12	5	1	5	10	3	1	0	

TABLE III (continued)

Time	Resp. No.	Age Group					Education Level					Pre- test	Post- test	Diff.	Attitude
		18- 24	25- 34	35- 44	45- 65	65+	-8	-HS	HS	-C	C+				
P.M.	40			X						X		30	70	40	3.31
	41	X							X			30	60	30	3.39
	42			X				X				30	70	40	3.71
	44				X					X		40	60	20	3.21
	45		X									50	70	20	2.68
	47				X					X		50	50	0	4.70
	53				X							30	70	40	3.53
	54					X		X				50	50	0	2.93
	55		X							X		30	70	40	5.61
	57				X				X			40	60	20	2.26
	58				X				X			30	70	40	3.21
	60				X				X			0	0	0	4.11
	61				X			X				20	40	20	4.58
	62				X			X				20	50	30	3.28
	63					X			X			30	70	40	3.53
	68			X				X				50	70	20	3.21
	71				X			X				10	40	30	3.02
Sub Total	17	1	2	3	9	2	0	5	6	3	3	0			
Total Remote Lecture	37	2	2	5	21	7	1	10	16	6	4	0			

TABLE III (continued)
FACE-TO-FACE LECTURE TECHNIQUE

Time	Resp. No	Age Group		Education Level						Pre-test	Post-test	Diff.	Attitude
		18-24	25-34	35-44	45-54	65+	-8	-HS	HS	-C	C	C+	
A.M.	2					X		X				30	3.22
	4				X					X		20	1.13
	6					X		X				40	3.10
	10					X				X		50	3.08
	13					X						60	3.00
	14		X					X				50	2.60
	18				X					X		70	3.17
	19				X							40	3.08
	22				X							50	3.00
	24				X		X					20	3.00
	25				X			X				60	2.93
	26				X					X		30	2.70
	28		X									50	3.33
	31				X			X				70	3.60
	32				X							30	2.80
	34		X					X			X	60	2.43
	35			X				X				80	2.64
	37				X					X		30	2.99
										X		50	2.26
Sub Total	18	0	3	1	10	4	0	4	5	6	2	1	

TABLE III (continued)

Time	Resp. No	Age Group						Education Level					Pre- test	Post test	Diff.	Attitude
		18- 24	25- 34	35- 44	45- 65	65+	-8	-HS	HS	-C	C	C+				
P.M.	39					X		X					10	60	50	2.60
	43				X				X				20	50	30	2.90
	46							X					40	80	40	3.95
	48		X	X					X				40	50	10	5.45
	49			X				X					40	80	40	4.18
	50				X			X					20	60	40	3.11
	51		X							X			60	60	0	2.51
	52				X					X			40	60	20	3.50
	56					X		X					30	50	20	6.97
	59				X			X					20	40	20	2.70
	64			X						X			20	60	40	4.78
	65			X						X			40	70	30	3.32
	66			X				X					20	50	30	2.89
	67	X								X			20	50	30	6.47
	69					X			X				40	60	20	3.71
	70				X					X			30	80	50	2.43
Sub																
Total	16	1	2	4	6	3	0	7	3	4	2	0				
Total																
Face-to-																
Face																
Lecture	34	1	5	5	16	7	0	11	8	10	4	1				

TABLE IV
MEAN SCORES OF FACE-TO-FACE AND REMOTE
LECTURE TECHNIQUES COMBINED

Age Groups	No.	Pre-test	Post-test	Diff.	Attitude
18-24	3	26.7	56.7	30.0	4.49
25-34	7	42.9	71.4	28.6	3.30
35-44	10	32.0	63.0	31.0	3.72
45-64	37	24.9	51.9	27.0	3.10
65-	14	30.7	55.0	24.3	3.49

MEAN SCORES OF FACE-TO-FACE LECTURE TECHNIQUE

18-24	1	20.	50.	30.	6.47
25-34	5	45.	72.	30.	3.10
35-44	5	34.	62.	28.	4.14
45-64	16	25.	51.	24.	2.91
65-	7	28.	55.	27.	3.66

MEAN SCORES OF REMOTE LECTURE TECHNIQUE

18-24	2	30.	60.	30.	3.49
25-34	2	40.	70.	30.	4.14
35-44	5	30.	64.	34.	3.28
45-64	21	24.	51.	27.	3.29
65-	7	32.	54.	21.	3.30

TABLE V

CORRELATION DATA OF REMOTE AND FACE-TO-FACE LECTURE TECHNIQUES

	Age	Education Level	Time	Pre-test Score	Post-test Score	Diff.	Attitude
Age	1.0000						
Education level	-0.3138	1.0000					
Time	-0.1984	-0.0273	1.0000				
Pre-test score	-0.2141	0.3178	0.1864	1.0000			
Post-test score	-0.3075	0.2400	0.1571	0.4967	1.0000		
Diff.	-0.1306	-0.0360	-0.0037	-0.3878	0.6074	1.0000	
Attitude	-0.1679	-0.0318	0.3435	0.1169	-0.0150	-0.1229	1.0000

Correlation data of remote and face-to-face lecture techniques.

N = 71

Age	1.0000						
Education level	-0.3589	1.0000					
Time	-0.2369	0.1975	1.0000				
Pre-test score	-0.0828	0.2205	0.2909	1.0000			
Post-test score	-0.2730	0.3346	0.1115	0.4569	1.0000		
Diff.	-0.2088	0.1521	-0.1390	-0.4019	0.6309	1.0000	
Attitude	-0.1574	0.0847	0.2547	0.1030	-0.1039	-0.1968	1.0000

Correlation data of remote lecture technique.

N = 37

Age	1.0000						
Education level	-0.2686	1.0000					
Time	-0.1585	-0.2360	1.0000				
Pre-test score	-0.3416	0.3958	0.0737	1.0000			
Post-test score	-0.3396	0.1424	0.2069	0.5360	1.0000		
Diff.	-0.0439	-0.2249	0.1562	-0.3746	0.5820	1.0000	
Attitude	-0.1821	-0.0952	0.4194	0.1330	0.0453	-0.0784	1.0000

Correlation data of face-to-face lecture technique.

N = 34

The difference between pre-test and post-test mean scores for the two groups as shown in Fig. A was only one tenth of one percentage point and was not significant at the five per cent level as determined by the t test.

The hypothesis that there is no significant difference in the amount of learning which takes place when educational information is presented to an adult audience by means of face-to-face and remote teaching techniques was accepted.

Hypothesis II

There are no associations between the amount of learning which takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as:

- a. age
- b. level of education
- c. time of day
- d. attitude.

Accepting the fact that factors other than techniques of teaching may influence the amount of learning which takes place when educational information is presented to adult audiences, the writer established the above hypothesis.

Correlation coefficients and tests of significance were computed relating the amount of learning which took place to the factors of (a) age, (b) level of education, (c) time of day, and (d) attitude. The data were analyzed in

relation to the total sample and by control and experimental groups.

a. age

Figure B shows graphically the pre-test, post-test and difference scores of participants by age groups.

The 25-34 age group scored highest on both the pre-test and post-test. The 45-64 age group scored lowest on both tests.

The greatest difference between the pre-test and post-test (amount learned) was found in the 35-44 age group. The difference was 31 percentage points.

The least amount of learning took place in the 65 plus group. There were twenty-two percentage points difference between pre-test and post-test scores.

Coefficients of correlation related to age and learning of all participants were as follows:

age and pre-test score $-.2141$

age and post-test score $-.3075$

age and difference between pre-test and post-test
scores $-.1306$.

An examination of Figs. C, D, and E reveals that the differences in test scores of participants were slight when the data were broken down according to age groups and teaching technique.

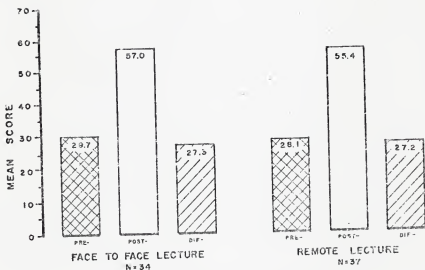


FIGURE A

AMOUNT OF LEARNING SHOWN BY THE DIFFERENCE BETWEEN
POST-TEST AND PRE-TEST MEAN SCORES BY
THE LECTURE TECHNIQUE.

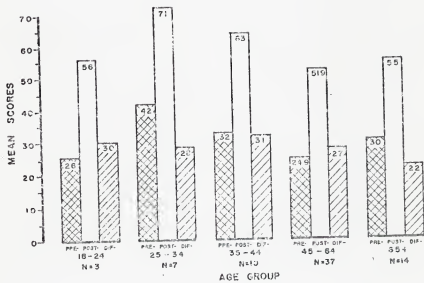


FIGURE B

A COMPARISON OF THE MEAN SCORES OF THE COMBINED TWO LECTURE
TECHNIQUES, FACE-TO-FACE AND REMOTE BY AGE GROUPS.

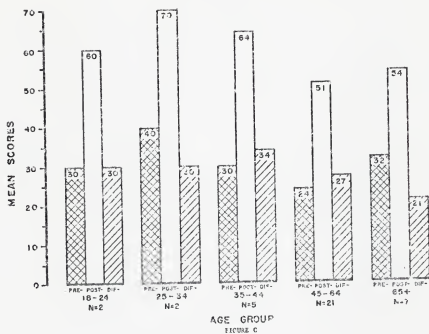


FIGURE C
A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS
IN THE REVERSE LITTERAL TECHNIQUE
BY AGE GROUPS.

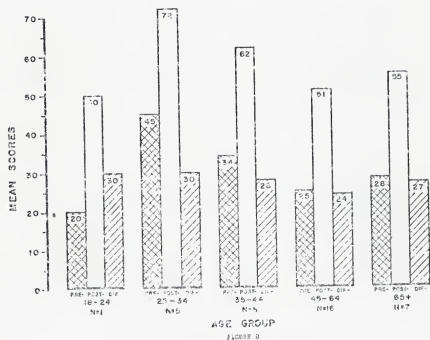


FIGURE D
A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS
IN THE REVERSE LITTERAL TECHNIQUE
BY AGE GROUPS.

In all except the 65 plus age category the amount of learning which took place (difference between pre-test and post-test) in the remote teaching situation was equal to or slightly greater than that which occurred in the face-to-face situation.

The 65 plus age group in the remote teaching situation learned less than the comparable group in the face-to-face situation.

The coefficients of correlation were fairly low and negative bearing out the generally accepted idea that younger people tend to learn at a higher rate than older people, at least as far as immediate recall is concerned. But the difference in the amount learned was not significant at the five per cent level.

Part a of the hypotheses was accepted in that there was no association between age and the amount of learning which took place under both the face-to-face and remote techniques of teaching.

b. level of education

Figure F shows graphically the pre-test, post-test and difference mean scores of participants by educational level.

The college graduate group scored highest on the pre-test and tied for high post-test score with the college plus group. The less than 8th grade group and the college plus

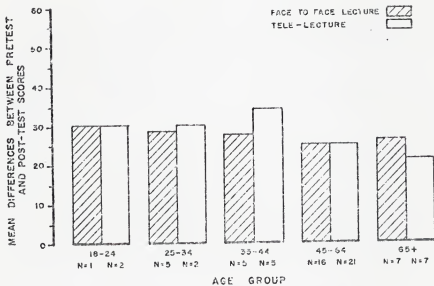


FIGURE E

A COMPARISON OF THE AMOUNT OF LEARNING AS SHOWN BY THE MEAN DIFFERENCE BETWEEN PRE-TEST AND POST-TEST SCORES OF PARTICIPANTS ON THE COMBINED LECTURE TECHNIQUES BY AGE GROUPS.

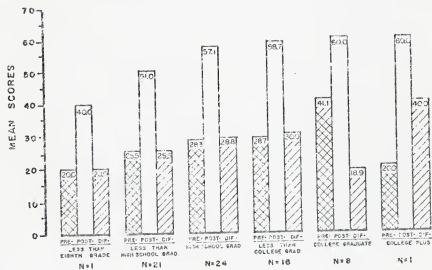


FIGURE F

A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS ON THE COMBINED LECTURE TECHNIQUES BY EDUCATIONAL LEVEL.

group tied for the lowest pre-test scores.

The greatest difference between the pre-test and post-test (amount learned) was found in the college plus group. The difference was 40 percentage points.

The least amount of learning took place in the college graduate group. There were 18.9 percentage points difference between pre-test and post-test scores.

Coefficients of correlation related to level of education and learning of all participants were as follows:

level of education and pre-test score .3178

level of education and post-test score .2400

level of education and difference between pre-test
and post-test score .0360.

The coefficients of correlation are positive bearing out the generally accepted idea that the higher the education the greater the ability to learn.

The coefficient of correlation was significant at the five per cent level between educational level and pre-test as well as educational level and post-test. The coefficient of correlation between amount learned and level of education was not significant at the five per cent level.

Part b of the hypothesis was accepted in that there was no association between the level of education and the amount of learning which took place under both the face-to-face and remote technique of teaching.

c. time of day

Figure G shows graphically the pre-test, post-test, and difference scores of participants by time of day.

The P.M. time group scored highest in the pre-test and the post-test scores under both of the teaching techniques.

The greatest difference between the pre-test and post-test (amount learned) was found in the P.M. in the face-to-face lecture technique. The least amount of learning took place in the remote lecture technique in the P.M. The differences were slight.

Coefficients of correlations related to time of day and learning of all participants were as follows:

time of day and pre-test score .1864

time of day and post-test score .1571

time of day and difference between pre-test and
post-test score -.0037.

The coefficients of correlation were negligible and not significant at the five per cent level.

Part c of the hypothesis was accepted in that there was no association between the time of day and the amount of learning which took place under both face-to-face and remote technique of teaching.

d. attitude

Figure H shows graphically the pre-test, post-test, and difference scores of participants by attitude and age levels.

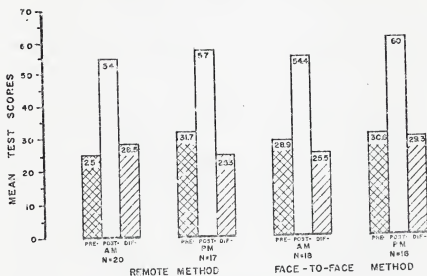


FIGURE G
A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS OF
THE REMOTE AND FACE-TO-FACE LECTURE
TECHNIQUES BY AGE.

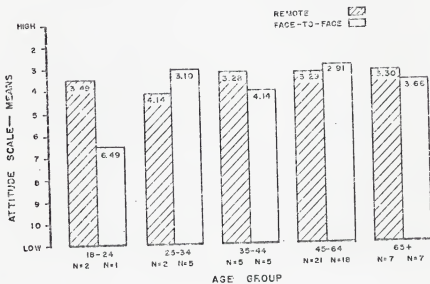


FIGURE H
A COMPARISON OF THE ATTITUDE MEAN SCORES OF THE PARTICIPANTS
OF THE REMOTE AND FACE TO FACE LECTURE
TECHNIQUES BY AGE GROUPS.

The 35-44 age group showed the highest positive attitude toward the remote lecture technique. The 25-34 age group indicated the least satisfaction with the remote lecture technique.

The 45-64 age group indicated the greatest satisfaction with the face-to-face lecture technique. The 18-24 age group indicated the least satisfaction with the face-to-face lecture technique.

Figure I shows the attitude value scale as scored by the participants in the different educational levels. The less than 8th grade educational level group scored the highest in attitude toward both lecture techniques. The college graduate education level group scored lowest in attitude, but still rated the teaching techniques as good.

Figure J shows the attitude value scale as scored by the participants according to time of day. The A.M. participants rated the two teaching techniques higher than the P.M. participants. The correlation coefficient was .3435 and was significant at the one per cent level.

Figure K shows the attitude value scale as scored by the participants in the age groups. The 45-64 age group rated the lecture techniques the highest, the 18-24 age group rated them the lowest.

Coefficients of correlation related to attitude and learning of all participants were as follows:

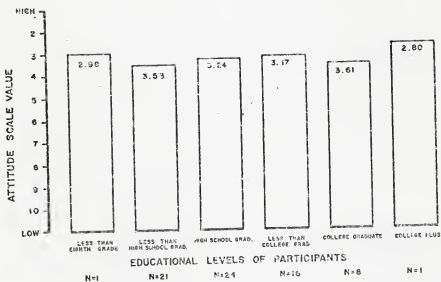


FIGURE 1

A COMPARISON OF THE ATTITUDE VALUE MEAN SCORES OF THE PARTICIPANTS OF THE COMBINED LECTURE TECHNIQUES BY EDUCATIONAL LEVEL.

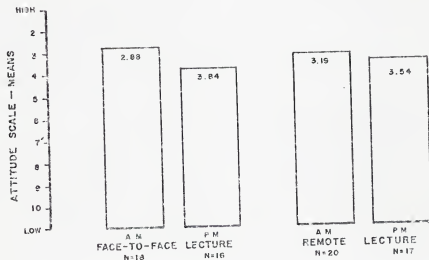


FIGURE 2

A COMPARISON OF THE ATTITUDE VALUE MEAN SCORES OF THE PARTICIPANTS OF THE FACE-TO-FACE AND THE REMOTE LECTURE TECHNIQUES BY TIME OF DAY.

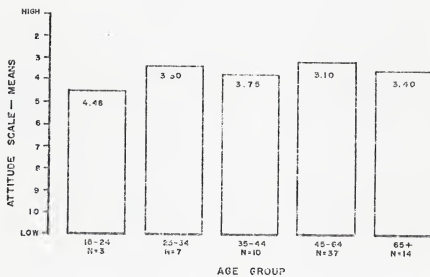


FIGURE 1

A COMPARISON OF THE ATTITUDE VALUE MEAN SCORES OF THE PARTICIPANTS OF THE COMBINED LECTURE TECHNIQUES BY AGE GROUPS.

attitude and pre-test score 0.1169

attitude and post-test score -0.0150

attitude and difference between pre-test and post-
test score -0.1229.

The coefficients of correlation were negligible and were not significant at the five per cent level.

Part d of the hypothesis was accepted in that there was no significant difference in the amount of learning that took place and attitude related to the teaching techniques.

CHAPTER IV

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

Introduction

The purpose of this study was to determine the relative effectiveness of two teaching techniques, (face-to-face and remote teaching) in communicating educational information to adults as indicated by immediate recall of the information presented.

The specific objectives of the study were:

1. To determine if there is a significant difference in the amount of learning that takes place when educational information is presented to an adult audience through face-to-face and remote teaching techniques.

2. To determine if there are associations between the amount of learning that takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as:

- a. age
- b. level of education
- c. time of day
- d. attitude.

The participants in this study were representative

of the Extension Homemaker Units of Reno County.

The data used in this study were collected at the time of the experiment held in Hutchinson, Kansas, May 1, 1968. Questionnaires designed to measure immediate recall were filled out by the participants before and following the lectures. The questionnaire consisted of a face data sheet designed to secure information about the participant; the pre-test, used to establish the amount of information the participants knew of the subject before hearing the lecture; the post-test, identical to the pre-test, but used to determine the level of knowledge of participants following the lecture; and the attitude scale, used to evaluate the acceptability of the two teaching techniques by the participants.

The data were presented in the form of tables and graphs and were analyzed by means of coefficient of correlation, and the t test.

Summary and Conclusions

Hypothesis I

There is no significant difference in the amount of learning which takes place when educational information is presented to an adult audience by means of face-to-face and remote teaching techniques.

The hypothesis was accepted.

The mean scores of the two groups on the pre-test were almost identical. The t test showed there was no significant difference in the level of knowledge of the subject possessed by the two groups.

The mean post-test score of both groups was higher than the pre-test score. The t test showed there was no significant difference in the level of accumulated knowledge.

The t test showed there was no significant difference in the amount learned (difference between the pre-test and post-test mean scores) by the two groups.

It was concluded, therefore, that either of the two teaching techniques could be used in a similar situation and a similar amount of learning could be expected.

Hypothesis II

There are no associations between the amount of learning which takes place when educational information is presented to an adult audience through face-to-face or remote teaching techniques and such personal and situational factors as: age, level of education, time of day, and attitude.

a. age

Age was negatively associated with amount learned, but the association was not significant at the five per cent level. The 25-34 age group participants had the highest pre-test score in both the remote and the face-to-face technique. This group also had the higher level of education

which may be more important than age.

The 25-34 age group participants had the highest post-test scores in both the remote and the face-to-face lecture technique. This age group tended to have more education and to have a more favorable attitude toward both techniques.

The amount of learning as indicated by the difference between the post- and pre-test scores of the 18-24 age group and the 25-34 age group was the same under the two teaching techniques. This might indicate the technique used in presenting educational information is not important to this age group.

The 35-44 age group learned the most under the remote teaching situation. This might indicate that this age group was more highly motivated to learn because of the content of the lecture.

The mean scores of the older group of 65 plus show that these participants learned the least under the remote lecture technique.

The older age participants learned slightly more in the face-to-face situation than their counterparts in the remote situation. This may bear out the theory that older people are more set in their ways and do not respond as readily to new techniques.

The amount of learning shown by the difference in the

post-test minus the pre-test scores of the age groups 18-24 years, 25-34 years, 35-44 years, and the 45-64 year participants was very similar.

b. level of education.

Level of education was positively associated with the test scores of the participants.

The coefficient of correlation was significant at the five per cent level between educational level and pre-test as well as educational level and post-test. The coefficient of correlation between the amount learned and level of education was not significant at the five per cent level under either remote or the face-to-face lecture situation.

The pre-test and the post-test scores were progressively higher as the level of education advanced, with the exception of the college plus group.

The amount of learning shown by the difference between the post-test and pre-test mean scores for all participants was progressively higher as the level of education advanced.

Although there were significant correlations particularly between level of education and pre-test and post-test scores, there were no significant relationships between amount learned and any of the four variables, therefore the hypothesis was accepted.

c. time of day

The participants scored higher in the P.M. than in the

A.M. on both the pre-test and the post-test.

The greatest amount of learning took place in the P.M. under the face-to-face teaching situation.

d. attitude

Although attitude as a factor in the amount learned in the experiment was not significant, a slight relationship did exist.

The 35-44 year age group had the highest mean score in attitude in the remote teaching technique. The 45-64 age group had the highest mean attitude score in the face-to-face teaching technique, but the remote technique was very close. This might indicate that the middle age groups could be expected to have a positive attitude toward new teaching techniques.

The attitude value of all participants showed the college plus group to have the highest attitude mean scores with the less than 8th grade education level being very close. These two groups rated the teaching techniques excellent and the other educational levels rated it good. There were no groups that rated the teaching techniques below good.

The attitude of the morning participants was higher than that of the afternoon participants. But the greatest amount of learning took place in the afternoon.

Implications

Based on the findings of this study the writer feels the following implications can be stated:

1. The study showed that there was no significant difference in the amount of learning which took place when educational information was presented to an adult audience through face-to-face and remote teaching techniques. Extension workers should explore and "try out" some of the newer methods of techniques in an effort to improve their efficiency in communicating educational information to their adult audiences.

2. If more people can be reached with an important message through some type of remote technique or if a needed message cannot be communicated at all by conventional techniques, consideration should be given to this type of communication.

3. Extension workers should take into consideration the educational level of the groups with which they work in presenting education information. It should not be assumed that participants in Extension teaching-learning situations know nothing about the subject being presented. They should expect the younger adults with higher educational levels to be better informed generally, and more critical of a "shot gun" approach by the teacher.

4. The amount of learning which takes place within

a teaching-learning situation can be measured. Also there are effective means for measuring attitudes related to techniques of presentation.

Too often Extension workers and other educators take for granted that all their teaching is "good" and they seldom bother to determine if their teaching objectives have been met.

An occasional pre-test and post-test exercise and the administration of an attitude scale could provide quite a revelation for some Extension workers.

Extension workers should evaluate their teaching in an objective manner. They should provide the opportunity for their clientele to evaluate teaching and teaching techniques periodically.

5. Extension workers should further investigate the effectiveness of afternoon presentations over morning presentations in learning situations. They would also consider the possibility of new teaching techniques being introduced in morning presentations.

6. The 35-64 age group in this study indicated their willingness to accept new teaching techniques. Extension cooperators often are in this age grouping, therefore more extensive use of new teaching techniques should be encouraged.

7. The review of the literature and careful examination of the data collected for this study indicate that the

greatest amount of learning in terms of immediate recall takes place during the early part of a remote lecture. The implication for the Extension worker here is that perhaps the best use of the remote teaching technique would be as a supplement to a meeting rather than the total resource.

8. Extension workers should be encouraged to use the remote teaching techniques such as tele-lecture, video tape, multi hook-ups, tapes with slides, and tape with visuals. These meetings could be used as agent training meetings, special interest meetings and workshops, small groups for leader training, county meetings, district agent conferences, and any group meeting where special information from a particular source would be beneficial.

Recommendations for Further Research

1. Investigations should be made continuously to determine the most effective techniques for presenting educational information to adult audiences.

2. A study should be made comparing the cost of traditional face-to-face lecture with various remote lecture techniques.

3. Studies should be conducted comparing the effectiveness of the tele-lecture with other traditional techniques of teaching.

4. A pilot study should be set up in a county with the full use of tele-lecture as a teaching technique.

Arrangements could be made with Extension Specialists or Resident Staff members to make five to ten minute presentations to any group anywhere in the state via telephone hook-up. With the wats system in operation at Kansas State University the only additional cost for such an arrangement would be the installation and rental fee for Bell owned receiving equipment.

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APPENDIX

INFORMATION BROCHURE

MONEY KNOW HOW

INCOME MANAGEMENT
SHORT COURSE

Reno County Extension Council

Meeting Room--10 Woodie Seat Freeway

South Hutchinson

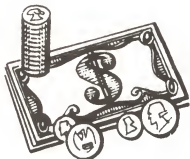
May 1, 1968

Telephone--MO2-2371

Come at

9:30 - 11:30 a.m. OR 1:30 - 3:30 p.m.

Dorothy Neufeld and Norma Redeker, district Extension home management specialists, will present the 1/2-day Short Course in Hutchinson.



How can the financial decision-making in your family be more effective? There are no set solutions to family money problems, but you can learn to use tools of management to improve dollar allocations.

an important message for YOU!

Dear Homemaker:

This special letter is to announce a Short Course on **MONEY KNOW HOW.**

Helen Blackwood, who is now in school at KSU, plans to use the results of the teaching methods adapted for this short course as part of her research project.

We need your help as a class member in order to help formulate the research results. An exciting new media called "Tele-lecture" will be used as a remote method of instruction.

The sessions will be conducted by two District Extension Specialists in Home Management, Mrs. Dorothy Neufeld from Iola, and Miss Norma Redeker from Hutchinson.

Topics to be discussed:

Where does money go?

Understanding cash flow.

Credit as a management tool.

Factors which affect money management decisions.

The Short Course will be offered, Wednesday, May 1, in the Extension Meeting room. You will have a choice of attending either session--the one at 9:30-11:30 a.m. or at 1:30-3:30 p.m.

Please return the enclosed card by Friday, April 26, indicating with a check mark whether or not you can attend.

Helen and I hope to see you May 1.

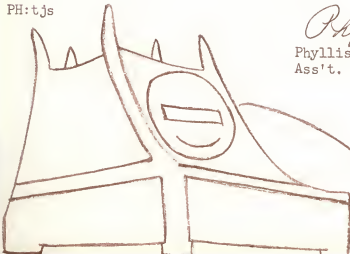
Sincerely,

Phyllis Howerton

Phyllis Howerton

Ass't. Co. Ext. Home Economist

PH:tjs



PRE-TEST

Name _____

QUESTIONNAIRE

Please check the group which represents your situation.

1. Age (check one please)

- .1 _____ under 18
- .2 _____ 18-24 years
- .3 _____ 25-34 years
- .4 _____ 35-44 years
- .5 _____ 45-64 years
- .6 _____ 65 and/or over

2. Education completed (check one please)

- .1 _____ less than 8th grade
- .2 _____ less than high school graduate
- .3 _____ high school graduate
- .4 _____ less than college graduate
- .5 _____ college graduate
- .6 _____ more than college graduate

PRE-TEST (continued)

Name _____

WHAT DO YOU KNOW ABOUT MONEY

1. The money coming into and going out of a family budget is called _____.
2. Some of the sources of this money coming into the family budget are:
 - a. _____
 - b. _____
 - c. _____
3. Money going out of the family budget might be called _____
or _____.
4. When credit is used, or the proceeds of a loan are spent, you are using _____.
5. A check in measuring progress toward achievement of goals is by _____.
6. One very good reason for making money income predictions is _____
_____.
7. Adequate records are important to determine the _____
_____.

Name _____

WHAT DO YOU KNOW ABOUT MONEY

1. The money coming into and going out of a family budget is called _____.
2. Some of the sources of this money coming into the family budget are:
 - a. _____
 - b. _____
 - c. _____
3. Money going out of the family budget might be called _____
or _____.
4. When credit is used, or the proceeds of a loan are spent, you are using _____.
5. A check in measuring progress toward achievement of goals is by _____.
6. One very good reason for making money income predictions is _____
_____.
7. Adequate records are important to determine the _____
_____.

EVALUATION SHEET

Instructions: Please check only those statements that describe most accurately your personal reaction to the total activity. Read all the statements before checking.

- ☐ 1. It was a most rewarding experience.
- ☐ 2. Exactly what I expected.
- ☐ 3. I hope we can have another in the near future.
- ☐ 4. It provided the kind of experience that I can apply to my own situation.
- ☐ 5. It helped me personally.
- ☐ 6. It solved some problems for me.
- ☐ 7. I think it served its purpose.
- ☐ 8. It had some merits.
- ☐ 9. It was fair.
- ☐ 10. It was neither very good nor very bad.
- ☐ 11. I was mildly disappointed.
- ☐ 12. It was not exactly what I needed.
- ☐ 13. It was too general.
- ☐ 14. I did not take any new ideas away.
- ☐ 15. It didn't hold my interest.
- ☐ 16. It was much too superficial.
- ☐ 17. I left dissatisfied.
- ☐ 18. It was poorly planned.
- ☐ 19. I didn't learn a thing.
- ☐ 20. It was a complete waste of time.

A COMPARISON OF THE EFFECTIVENESS OF FACE-TO-FACE
AND REMOTE TEACHING IN COMMUNICATING
EDUCATIONAL INFORMATION TO ADULTS

by

HELEN H. BLACKWOOD

B. A., University of Kansas, 1947

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

The purpose of this study was to determine the relative effectiveness of two teaching techniques, (face-to-face and remote teaching), in communicating educational information to adults.

The participants were representative of the Extension Home Economic Units of Reno County, Kansas. Questionnaires designed to measure immediate recall were filled out by the participants before and following the lectures. The questionnaire consisted of a face data sheet designed to secure information about the participants; the pre-test, used to establish the amount of information the participants knew of the subject before hearing the lecture; the post-test, identical to the pre-test, but used to determine the level of knowledge of participants following the lecture; and the attitude scale, used to evaluate the acceptability of the two teaching techniques by the participants.

A standard illustrated lecture was presented by a specialist to the control group. The experimental group received the same lecture by the same specialist simultaneously via telephone line.

The data were presented in the form of tables and graphs and were analyzed by means of coefficient of correlation and the t test.

The mean scores of the two groups on the pre-test were almost identical. The t test showed there was no

significant difference in the level of knowledge of the subject possessed by the two groups.

The mean post-test scores of both groups was higher than the pre-test score. The t test showed there was no significant difference in the level of accumulated knowledge.

The t test showed there was no significant difference in the amount learned by the two groups.

It was concluded, therefore, that either of the two teaching techniques could be used in a similar situation and a similar amount of learning could be expected.

In order to determine whether factors other than technique of teaching which might be related to the amount of learning which took place, correlation coefficients were determined between amount of learning and age, educational level, time of day and attitude.

Age was negatively associated with amount learned, but the association was not significant at the five per cent level.

The 35-44 age group learned the most under the remote teaching situation. This might indicate that this age group was more highly motivated to learn because of the content of the lecture.

The coefficient of correlation was significant at the five per cent level between educational level and pre-test as well as educational level and post-test. The association

between the amount learned and level of education was not significant at the five per cent level in either the remote or the face-to-face lecture situation.

The participants scored higher in the P.M. than in the A.M. on the pre-test and the post-test scores. The greatest amount learned was in the P.M. in the face-to-face lecture.

Although attitude as a factor in the amount learned in the experiment was not significant, a slight negative relationship did exist. The attitude of the morning participants was higher than that of the afternoon participants. But the greatest amount of learning took place in the afternoon.

New methods and techniques of teaching will be necessary in the future if the educational needs of adults are to be met.

Remote teaching is one technique that could greatly multiply the efforts of the professional Extension worker, saving time and expense as pointed out in this study. For those who have the initiative to try the new techniques adult education offers a real challenge and unlimited opportunities.