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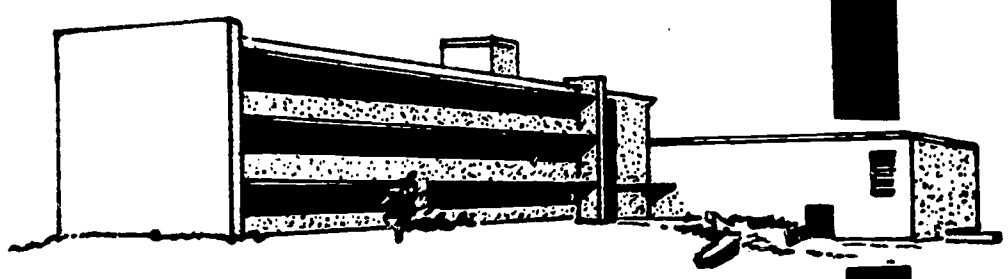
Research studied the effectiveness of class lecture as compared to telelecture, and the association between amount learned and the personal and situational factors of age, level of education, time of day, and attitude. Pretests and posttests collected level of knowledge and personal information from 71 women during a short course on Money Management given by University Extension Specialists in Reno County. The sample was randomly divided into an experimental and control group. It was found that no significant difference in amount of learning existed. Several tendencies, not statistically significant, were revealed: age was negatively associated with amount learned; level of education was positively associated with pre and posttest scores; scores were higher in the afternoon than morning, although attitudes were higher in the morning. It was concluded that either teaching technique could be used resulting in similar amounts of learning. Implications for extension workers and use of remote teaching techniques are included. (pt)

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

Cooperative Extension Service
Kansas State University
Manhattan



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OCTOBER 1968

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

Helen Blackwood*
and
Curtis Trent*

INTRODUCTION

It has been stated that "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". [1] This study has evolved out of this need.

PURPOSE

The purpose of this study was to compare the relative effectiveness of face-to-face and remote teaching (telelecture) in communicating educational information to an adult audience. The underlying purpose was not merely an effort to determine which of the two techniques was superior, but, if the hypothesis proved correct, to present evidence that newer, more efficient techniques of teaching can be substituted for less efficient traditional ones.

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

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The remote teaching technique (telelecture) was selected for comparison because of the apparent low cost, simplicity of use, and potential outreach. With the WATS system in operation at KSU the only cost involved would be connection charges and rental fees for Bell owned equipment.** The process is as simple as placing a telephone call and a lecture can be presented to any size audience in the state of Kansas without the lecturer ever leaving his office.

The major hypothesis of the study was that there would be no difference in the amount learned under the two teaching situations. The data collected supported this hypothesis.

It is hoped that the findings of this study will encourage Cooperative Extension teachers and other adult educators to experiment with new innovations in teaching.

BACKGROUND AND NEED FOR THE STUDY

The Cooperative Extension Service along with other adult education agencies currently are faced with expanding and diverse audiences -- audiences whose educational needs cannot be met through traditional methods and techniques of teaching which tax limited human and financial resources.

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 educational information.[2]

Newer and more economical techniques must be developed and used if this ever increasing audience is to be served.

** Approximate costs -- Installation, $25.00; monthly rental of receiver, $40.00; monthly charge for private line Manhattan, Kansas, $5.65.

[2] Annual Statistical Report of State and County Extension Workers for 1967, (Manhattan, Kansas, January 1968), p. 2.

SCOPE AND PROCEDURE

The sample used in the study was composed of seventy-one people of varying ages and educational levels (See Table I) All were members of County Extension Homemaker Units in Reno County, Kansas.

TABLE I

NUMBER OF PARTICIPANTS BY TECHNIQUE

Technique	No. of Participants
Face-to-Face	34
Remote	37
Total	71

A letter was sent to all fourteen hundred County 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 and seventy-one actually attended.

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 pre-tested with graduate students at Kansas State University.

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.

A part of the data gathering instrument used in the study was an examination developed by Helen Blackwood with guidance of the specialist lecturer, Dorothy Neufeld. The objectives of her lecture were studied and the questions were developed from these objectives. The examination was designed to measure knowledge level before and after the lecture. The questions were of the completion type which eliminated guessing. A value of ten points was given for each question answered correctly. A total score of 100 was possible.

An evaluation scale of the Thurston-Chave type was used to determine the attitude of the participants toward the technique of presentation. The scale was developed by Russell Kropp and Coolie Verner[3] 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 and programmed for computer analysis.

[3] Russell P. Kropp and Coolie Verner, "An Attitude Scale Technique for Evaluating Meetings", Adult Education, (Vol. 7, Summer 1957), pp. 212-215.

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.

STATEMENT OF HYPOTHESES

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.

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, and d. attitude.

SUMMARY AND CONCLUSIONS

There was no significant difference in the amount of learning which took place when educational information was presented to the adult audience by means of face-to-face and the remote teaching technique.

The mean scores of the two groups on the pre-test were almost identical. (See Figure A) The t test showed there was no significant differences in the level of knowledge of the subject possessed by the two groups.

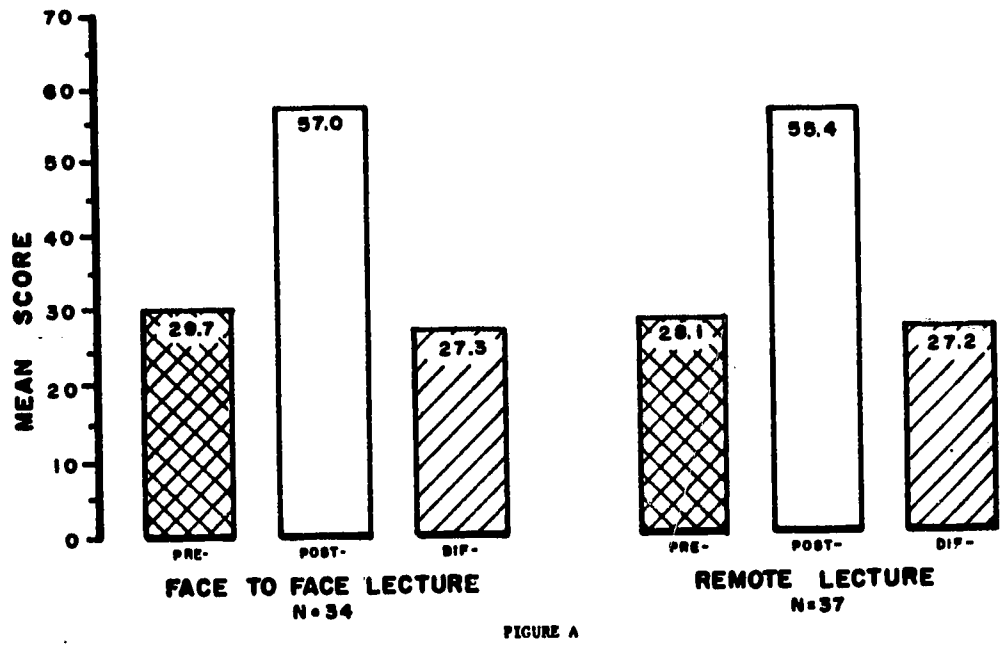

FIGURE A

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

The mean post-test scores of both groups were higher than the pre-test scores. 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 and a similar amount of learning could be expected.

There were no associations between the amount of learning which took place when the educational information was presented to the adult audience through face-to-face or remote teaching techniques and the personal and situational factors: a. age b. level of education c. time of day d. attitude.

A. AGE

Age was negatively associated with amount learned but the association was not significant at the five percent level. (See Figures B, C, D, E) 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 highest level of education which may have been more important than age.

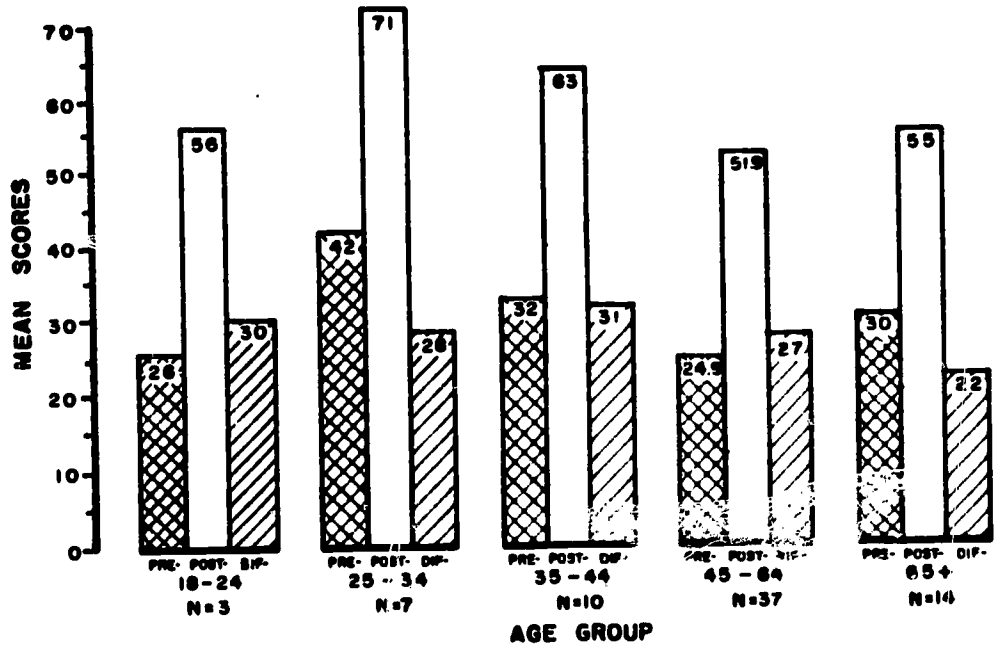

FIGURE B

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

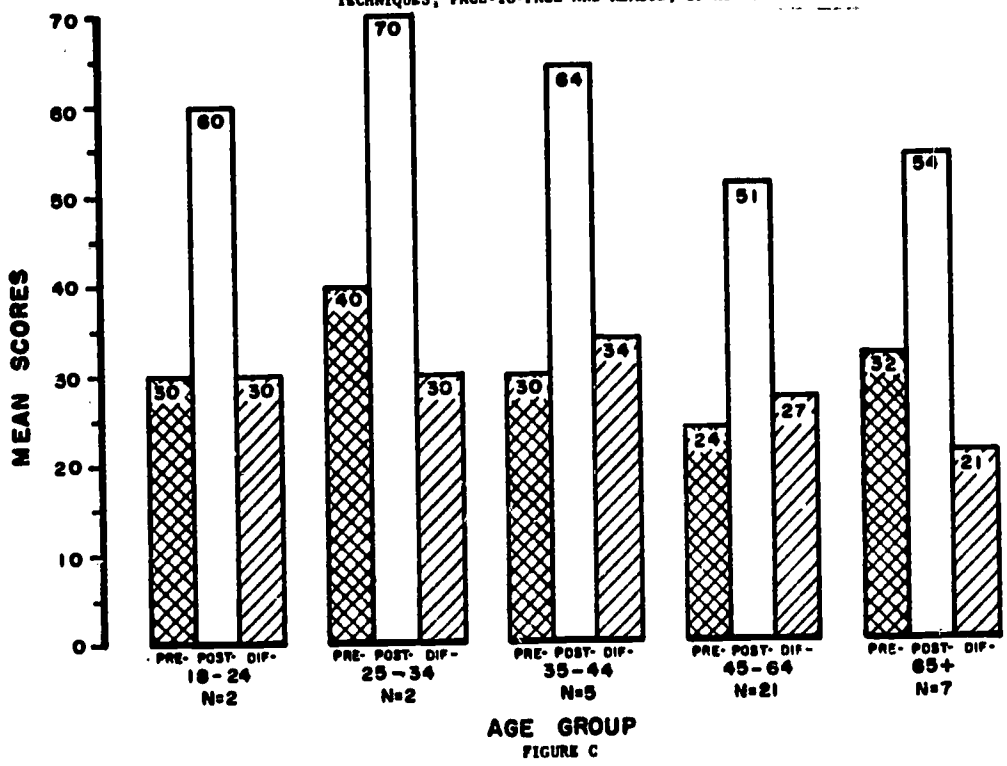

FIGURE C

A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS IN THE REMOTE LECTURE TECHNIQUE BY AGE GROUPS.

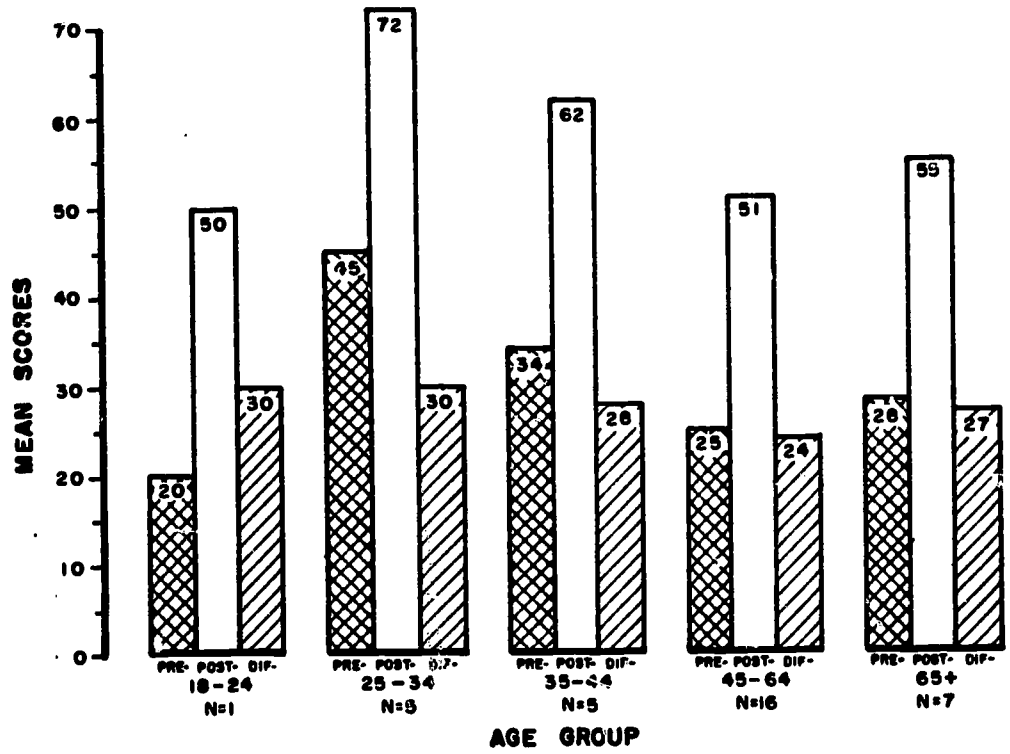

FIGURE D

A COMPARISON OF THE MEAN SCORES OF THE PARTICIPANTS
IN THE FACE TO FACE LECTURE TECHNIQUE
BY AGE GROUPS.

FIGURE 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.

The 25-34 age group participants had the highest post-test scores under both the remote and the face-to-face lecture techniques. 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.

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 age group of 65 plus show that these participants generally learned the least under both lecture techniques. This may bear out the theory that older people actually do learn at a slower rate than younger people.

The older age participants learned slightly more in the face-to-face situation than their counterparts in the remote situation.

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 pre and post-test scores of the participants.

The coefficient of correlation was significant at the five percent 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 percent level in either the 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. (See Figure F)

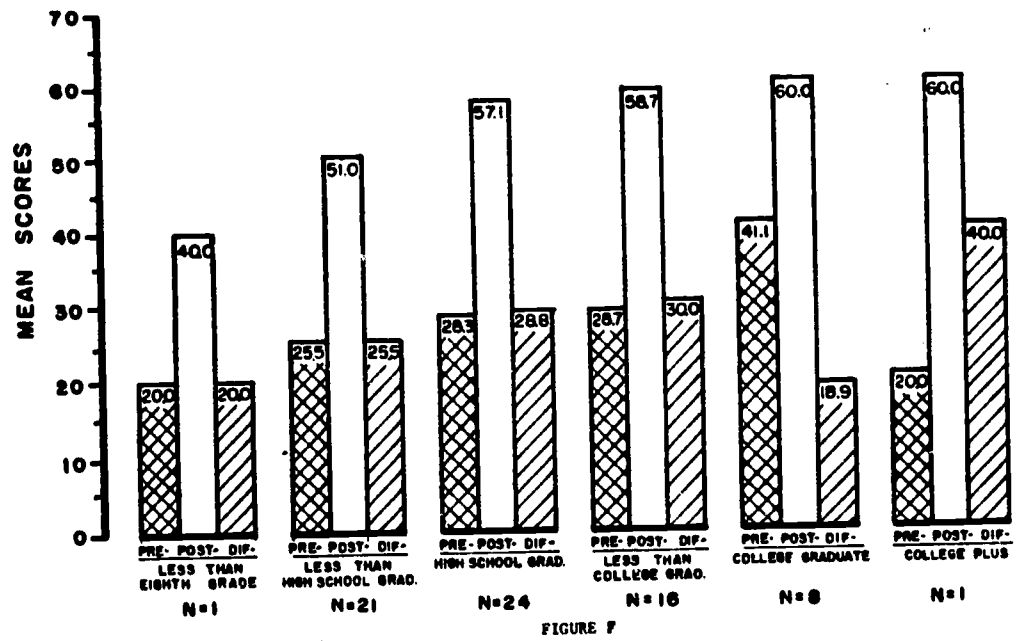

FIGURE F

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

The amount of learning as shown by the difference between the post-test and pre-test mean scores of the two teaching techniques also was progressively higher as the level of education advanced, with the college graduate group being the exception.

C. TIME OF DAY

The participants scored higher in the P.M. than in the A.M. on the pre-test and the post-test. (See Figure G)

The greatest difference in the amount learned was in the P.M. in the face-to-face lecture.

Although the relationships were not significant at the five percent level, the facts collected in this study suggest that time of day might be influencial in the amount learned by participants in a learning situation. Further research is needed.

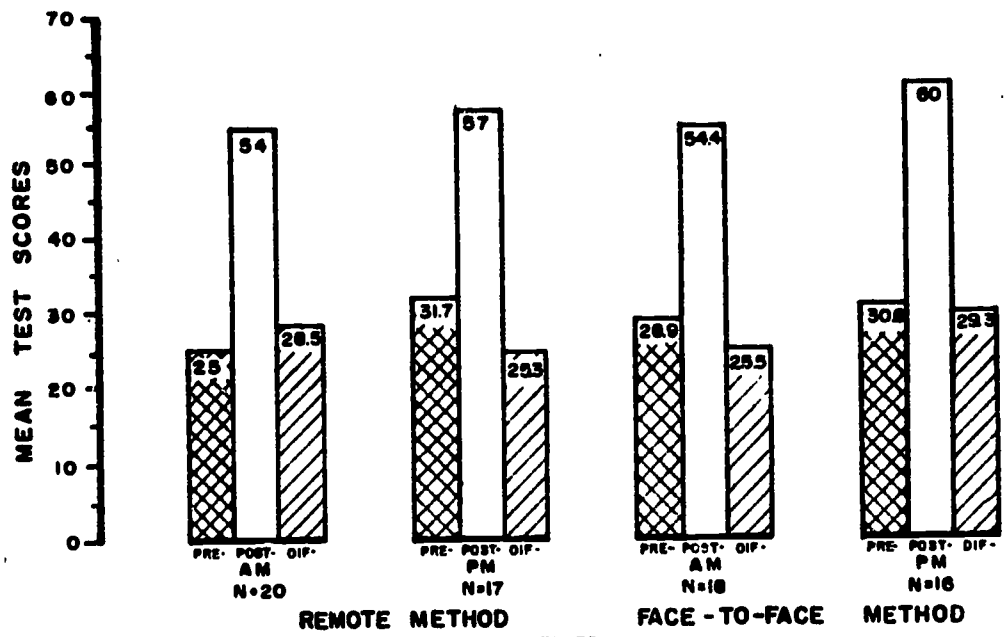

FIGURE G

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

D. ATTITUDE

Although attitude as a factor in the amount learned in the experiment was not significant, a slight relationship did exist. (See Figures H through K)

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 differences were very small.

The attitude value of the two teaching techniques combined showed the college plus group to have the highest attitude mean scores with the less than eighth grade education level being very close. These two groups rated the teaching techniques excellent and the other educational level groups rated them good. No group rated the teaching techniques below good.

In this study, 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.

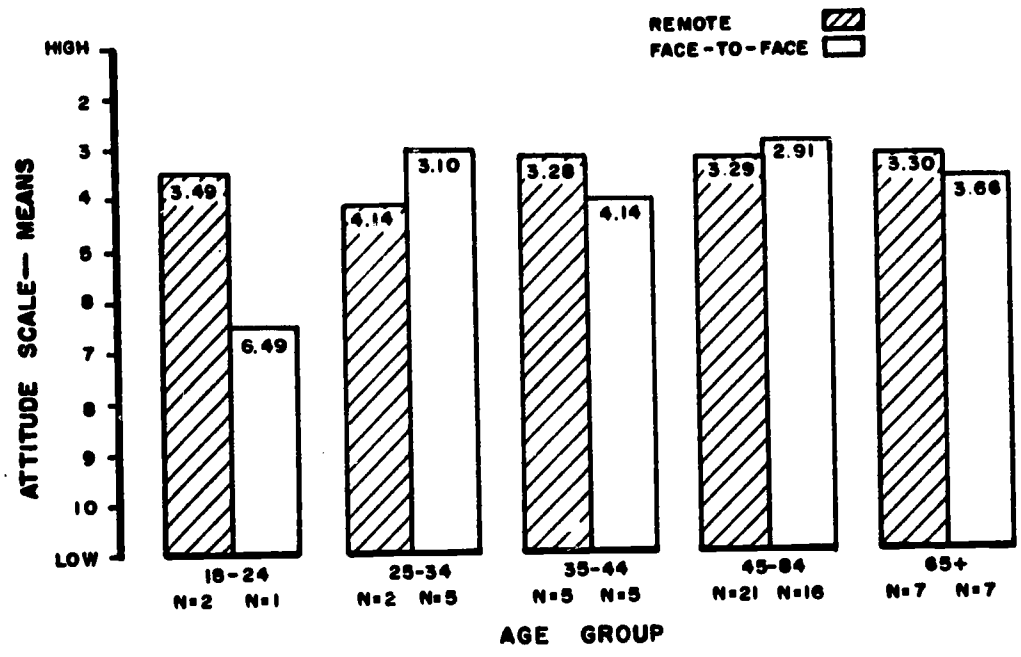

FIGURE H

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

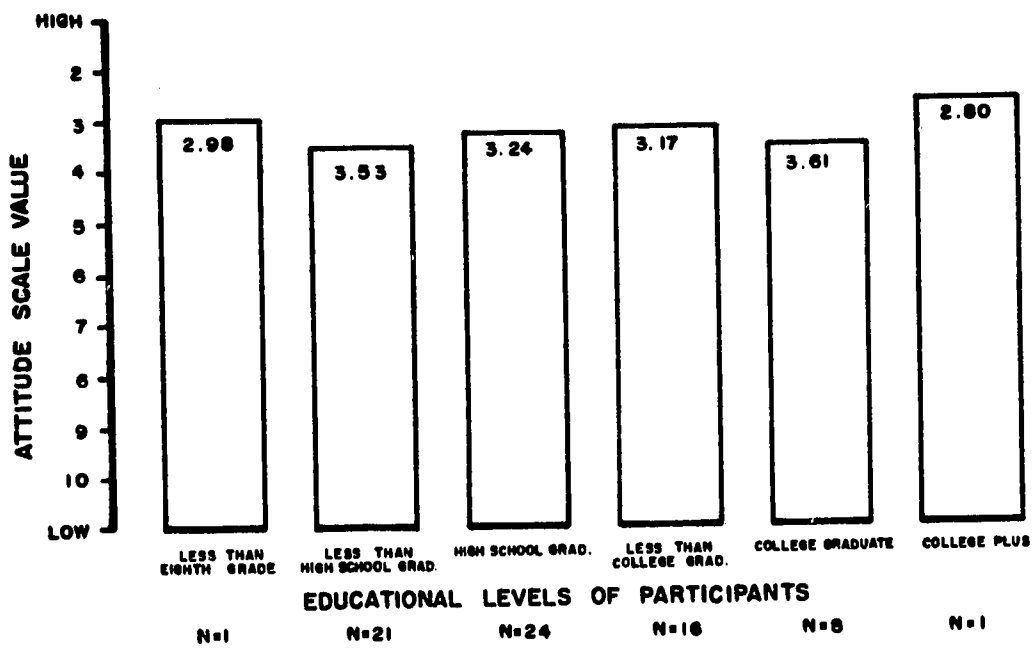

FIGURE I

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

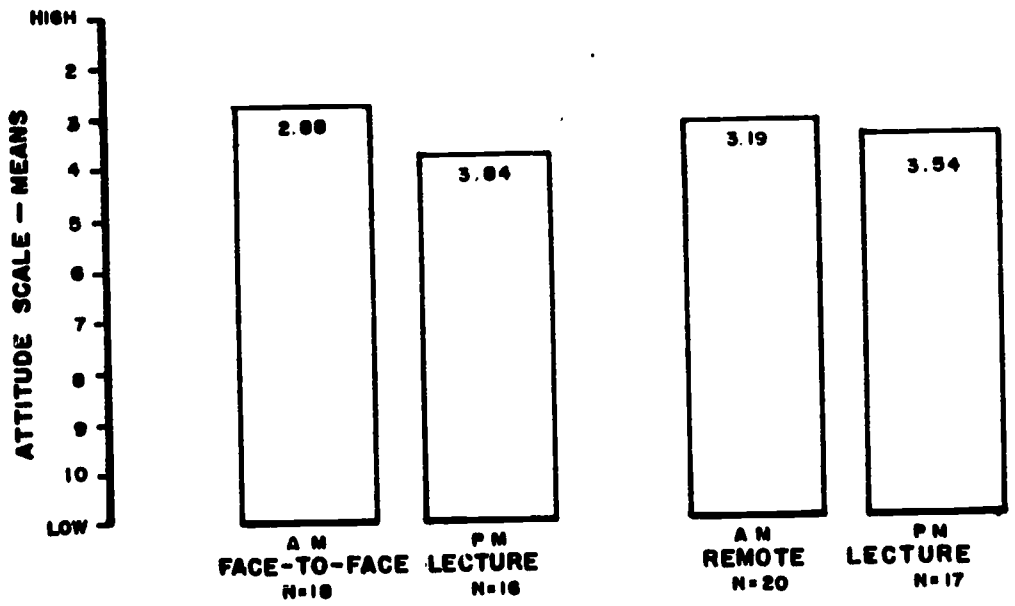

FIGURE J

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

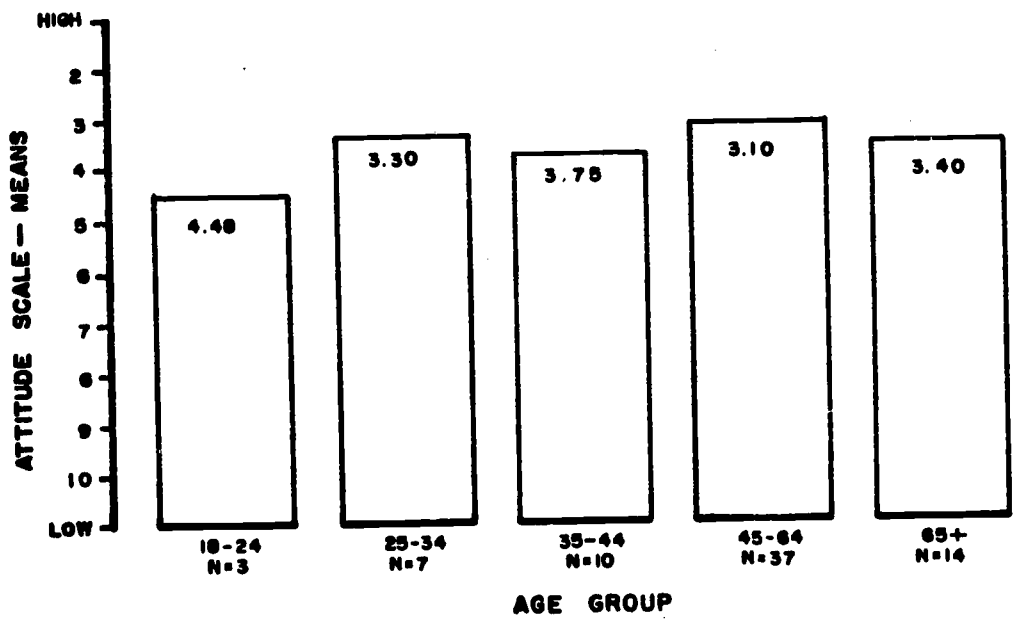

FIGURE K

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

IMPLICATIONS

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

A considerable amount of time spent in the preparation for one presentation could be saved by making use of 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 worker 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.

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. Perhaps the adult educator's best use of the remote teaching technique would be as a supplement to a meeting or class rather than the total resource.

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

Many informal meetings are held by the Cooperative Extension Service. The continued participation at 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. Extension educational teaching methods need to improve to keep pace in a rapidly changing era of knowledge and communications.

ACKNOWLEDGEMENT

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COOPERATIVE EXTENSION SERVICE, KANSAS STATE UNIVERSITY, MANHATTAN

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