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A Comparison of Two Methods of Student Evaluation via Video Tape in a Fundamentals of Speech Program

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A Comparison of Two Methods of Student Evaluation

via Video Tape in a Fundamentals of Speech Program

(TITLE)

BY

Ronald Lynn Stephenson

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1971

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
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DEPARTMENT HEAD

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CHAPTER I

INTRODUCTION

Research in the field of speech concerning student evaluation and teacher critique via video tape has appeared in research journals only in the past six years. However with video tape becoming increasingly popular in the educational field, investigations are needed to both simplify and to further test the advantages gained by a video tape facility. Video tape is appearing more and more in the classroom, but little use is being made of the medium other than the simple record-playback function. This study is designed to investigate two procedures of student evaluation via video tape. Hopefully, such knowledge would allow for better use of various institutions' video tape facilities, would require less operation time on the part of the student and professor, and would provide a significant contribution to the area of student-teacher video tape operation, both at Eastern Illinois University and in other institutions.

Video tape development depends directly on the imagination of the teacher and the student. This study is an attempt to place a new perspective on the use of the medium without significantly placing added time requirements on the teacher or the student. When comparing the findings of other studies, it is apparent that many video tape systems

introduce outside variables which destroy the classroom situation. For example, video tape equipment is dollied into the desired room, or the students are taken to a classroom-studio for purposes of taping the "average speech."¹ However, Eastern Illinois University's completely remote controlled television equipment offers one of the purest classroom situations for the utilization of video tape. With these features many of the outside variables foreign to the classroom but encountered in the studio or portable video concept can be eliminated. It has long been argued by speech theorists that if the classroom situation is going to be tested and analyzed, the classroom atmosphere must be present. Such factors as cameras, cameramen, production crews, directors, and other pieces of equipment must not be present to act as possible extraneous variables.²

If video tape is to be used in the speech class, some knowledge of the scientifically derived results of student self-evaluation via video tape must be discovered. Serving as the "student's mirror," student evaluation via video tape should be researched and applied.

Previous research has focused mainly on student attitudes toward the use of video tape, teaching via video tape, and evaluation of

¹Bert A. Bradley, "An Experimental Study of the Effectiveness of the Video-Recorder in Teaching a Basic Speech Course," Speech Teacher, 19:161-168, September, 1970.

²Samuel L. Becker, John Waite Bowers and Bruce E. Gronbeck, "Videotape in Teaching Discussion," Speech Teacher, 17:106, March, 1968.

equipment and production procedures.³ Very little of the previous research deals directly with student improvement in the speech class, while only a few studies examine the different methods of student evaluation or self-utilization in playback procedures. It was for these reasons that the present study was undertaken.

Importance of Study

Although suggested in numerous studies, there is a lack of direct research in the area of playback analysis and teacher critique. Video tape usage is apparent in the educational field, but student worth gained from video tape has almost totally been neglected in the field of speech. This study attempted to cast new light on the area of video tape's uses in the speech class along with an alternative suggestion to the problem of physically locating the equipment in the classroom. This study, while applying to the speech program at Eastern Illinois University, could very easily and without harmful alteration or introduction of extraneous variables be applicable to portable video tape systems found today in many high schools and colleges.

Review of Literature

Published material dealing with video tape research has begun to appear only in the last six to eight years. Before that time many studies reported were on the uses of instructional and educational television.

³Robert H. Bray, Vincent J. Greglio, Roger G. Graft, Walter L. Ross, and David V. Stimpson, "Comparison of Attitude Changes Elicited by Live and Video-tape Classroom Presentations," A-V Communication Review, 17: 315-21, Fall, 1969.

However, the rapid production of video tape equipment manifested by the relatively low cost of the electronic equipment opened new doors to the world of classroom teaching. However, few studies have been reported in the published literature which lead themselves to the task of testing for the best methods of video tape application. Video tape is a medium so flexible that studies are just now beginning to report research on the value gained through student self-critique on a speaking assignment.

Especially true is the fact that few reports have been written with the student's viewing capabilities in mind. For example, a study by Dieker, Crane, and Brown sought to report on the student's self-concept and personality needs when acting as a speaker.⁴ These researchers raised several questions which relate directly to the study under consideration. The major finding was that, "self-viewing, when combined with the kinds of speaking assignments used in the first speech course, provides the student with the feedback necessary to evolve a realistic conception of himself."⁵

They further reported:

Since the self-viewing did not take place until the next class period following the video taping, the self-ratings were made about two days after the actual speaking experience. In order to control for the time factor, the control group also waited until the next class period to fill out the rating scales. By the time the students in the control condition filled out the rating

⁴Richard J. Dieker, Loren Crane, and Charles T. Brown, "Repeated Self-Viewings on Closed-Circuit Television as it Affects Changes in the Self-Concept and Personality Needs of Student Speakers," Speech Teacher, 10:131-143, March, 1971.

⁵Ibid., p. 140.

forms, they may have forgotten some of their weaknesses, while students in the self-viewing condition were reminded, by video tape, of their experience, and the forgetting of the actual experience may therefore not have been as great.⁶

Additionally, this study further analyzed the time and position of teacher and student critiquing to be used with the video taped speech. They concluded:

One of the more important variables which needs to be explored in the future is related to the self-analysis which accompanies self-viewing. Some of the research dealing with self-viewing in psychotherapy suggests that the most effective use of the self-confrontation experience can be accomplished by reflective analysis at various times during the playback. For instance, in some studies, the counselor views the tape with the client, and asks questions about feelings, motivations, and attitudes at various points during the playback. Other studies have used comments following and preceding the video tape playback to assist in the self-analysis. What kinds of comments, at what times, and for what types of students achieve greatest impact for the self-viewing experience?⁷

In raising the issues about what type of comments, at what times, and for what types of students, Diaker, Crane, and Brown struck upon several video tape questions. Still needing to be answered are problems such as when video tape critiquing does not immediately follow the speech and the use of leader evaluations coupled with the most effective positioning of such evaluations.

In a 1964 Purdue University Study, Harold E. Nelson suggested:

Video taping of speeches would be most valuable to students on their second speeches when they are

⁶Ibid.

⁷Ibid., p. 142.

over the initial confusion of their first speech and are just starting to think about the initial criticism of their delivery.⁸

Later in this brief article, Nelson reported:

The Air Force Academy has also used video taping in teaching speech, and the cadets in response to a questionnaire indicated that they found critiques were more meaningful when accompanied by the playback of the video tapes; 72% of the responses indicated the playback aided "very much" and 28% found they aided a moderate amount.⁹

The Air Force Academy results indicate that students perceive benefit from the use of video tape in the classroom as compared to the conventional method of teaching a fundamentals of speech program. However, the students perception of the advantages of the use of video tape and the scientific experimental results of studies reported on the matter have been contradictory in several of the cases.

Additionally, the research conducted on the value of video tape replay and reviewing by the speech student also has created conflicting results. For example, James C. McCroskey and William Lashbrook reported in a 1970 study¹⁰ that students of public speaking who viewed the video taped playback of their communicative act, after proper instruction in theory, better met the goals of the course than students who did not view such video taped playback. Secondly, they reported that students

⁸Harold E. Nelson, "Videotaping the Speech Course," Speech Teacher, 17:101, March, 1968.

⁹Ibid.

¹⁰James C. McCroskey and William B. Lashbrook, "The Effects of Various Methods of Employing Video-Taped Television Playback n a Course in Public Speaking," Speech Teacher, 19:199-206, September, 1970.

of public speaking who receive instructor and peer criticisms during and subsequent to viewing video taped playback of their communicative act, after proper instruction in theory, better met the goals of the course than students exposed to either video taped playback without criticisms or criticisms without video taped playback.¹¹

The study's procedure used advanced persuasive speaking classes. Each class was divided into three groups with one group being the traditional course group, a second becoming the video tape only group, and the third acting as the video tape and criticism group. Each of the classes met in a studio with cameras secluded behind a one-way mirror and mounted remotely on the ceiling. One camera was focused on the audience while one camera covered the speaker. By the use of a fader-splitter, one camera or both cameras could be seen at the same time. This allowed the speaker to see himself and the audience during playback of the video tape.

The results rejected their first hypothesis by discovering that the class using video tape only was significantly lower in content retained than the control group (traditional course) and a video and criticism group. The second hypothesis was found to be supported by the results gained from the study, i.e., that students in the video tape and criticism group were significantly higher in the learning process. However, McCroskey and Lashbrook concluded that the best method of video application was coverage of the audience rather than coverage of the speaker. They concluded:

¹¹Ibid., p. 204.

Our results indicate that showing the student speaker his speech on video tape works directly counter to the goals of our course and those of many other speech educators. Yet, that is precisely the way television seems to be most often employed. Even the most competent previous research has accepted this procedure.

On the other side of the coin, television can be employed in such a manner as to make a positive contribution. But our results suggest that it cannot be used as a replacement for instructor and student discussion and criticism.¹²

In suggesting that television or video tape cannot be used as a replacement for the instructor's or the student's discussion and criticism, McCroskey and Lashbrook raised the question of how best student evaluation can be employed and when should the employment of such an evaluation best be used. Their results show that the camera should be on the audience and critiques by the professor should not be omitted. These suggestions still need further evaluation. Also, camera placement and the time sequence location of the evaluation still need to be investigated because of the limitations placed on such a procedure by the requirements of equipment and man-power.

A research study supporting the hypothesis that video tape did not have a significant effect on the student's ability to recall the theoretical principles taught in a basic speech course was reported by Bert E. Bradley.¹³ The article listed three hypotheses. First, the use of the video-recorder in a beginning speech course does not have a significant effect on the student's ability to recall the theoretical principles

¹²Ibid., p. 205.

¹³Bradley, op. cit., pp. 161-168.

taught in the course. Secondly, the use of the video-recorder in a beginning speech course does not have a significant effect on the student's speaking ability at the end of the course. Thirdly, the use of the video-recorder in a beginning speech course does not have a significant effect on the attitude of the student toward the course.

Seven oral assignments were given to the classes with one class having all the assignments recorded and played back in class except for the final speech, which involved a scheduled meeting of student and teacher outside of the classroom period. The second section had only the fourth assignment taped, and the final class had no assignments taped. The camera for the experiment was placed twelve feet in front of the speaker with a lavalier used for the audio pick-up. The results showed no significant effect on the student's ability to recall the theoretical principles taught in the course (Hypothesis I) and there was no significant effect on the student's speaking ability at the end of the course (Hypothesis II). However, Bradley found that the video-recorder in a beginning speech course did have a significant effect on the attitude of the student toward the course. This supports the earlier finding at the Air Force Academy.¹⁴

A research study which found significant advancement in student evaluation via video tape was offered by Deihl, Breen, and Larson.¹⁵ They attempted to examine two means of alleviating nonfluency--teacher

¹⁴ Nelson, op. cit., p. 101.

¹⁵ E. Roderick Deihl, Myles P. Breen, and Charles U. Larson, "The Effects of Teacher Comment and Television Video Tape Playback on the Frequency of Nonfluency in Beginning Speech Course," Speech Teacher, 19:185-190, September, 1970.

criticism and television video tape playback--with a view to determining the effectiveness of each of these methods singularly and in conjunction with each other. They included six groups of students to be considered in the study. Group I was a control group which had no television, no instructor comments, and no critique by the instructor. Group II used the cameras only and had no instructor's comments. Group III used playback procedures but had no critique from the instructor. Playback, comment, and criticism were included in Group IV. Self-evaluation by the student was added to Group V, but no comments were given by the instructor as both student and professor viewed the tape with the student telling what mistakes were made. In Group VI, the criticism only group, no tape was used and the instructor offered criticism of the speech in the fundamental manner.

The results revealed that fewer nonfluencies developed with Group I. However, at Group IV the addition of criticism by the professor resulted in significantly fewer nonfluencies by the subjects. Hence, they concluded that students cannot correct their own errors without criticism being offered by the professor as well as they can correct their own errors when the professor offers criticism. These findings indicated that some progress was noted via video tape before criticism was added, but significant progression was made when criticism was added. This conclusion contradicts Bradley and his results of recall and speaking ability.

In a 1968 investigation, Becker, Bowers, and Gronbeck reported that "using video tape with discussion classes in the ways we have used it at University of Iowa increases the speed at which and the degree to

which we can help students acquire these kinds of sensitivity."¹⁶ They placed a group of students in a studio where they could focus on individual shots of the members during the taping and superimpose comments on slides to positively and negatively support members during the playback. In addition, they recorded audio comments on the tape by a professor in the control room, used a loud speaker to break into the discussion, and used live comments from the instructor during playback. All the feedback elements were used together in one procedure.

They concluded that students seemed to evaluate the method as preferable to the type of instruction found in the conventional classroom.

They further concluded:

Obviously, this method of instruction results in each discussion taking much more time since, in effect, each is gone through twice--the original plus the playback. Though some time may be saved by more efficient criticism (especially those criticisms which are superimposed on the tape), the instructor is forced to have fewer discussions during the term or to cut down on other aspects of the course. This method is expensive. In addition to the instructor and engineer, equipment and tape de reciation, it requires a director, an audio operator, a video control operator, and two cameramen. Though most, if not all, of the crew members may be students working for experience only, the time and cost of organizing and supervising their work is substantial. We can see no way to bring down the cost of this method of instruction even to approximate the cost of the more usual method of teaching discussion. In spite of the disadvantages noted, we are convinced that the use of video tape in the teaching of discussion shows sufficient promise that we must continue exploring its possibilities.¹⁷

¹⁶Becker, Bowers, and Gronbeck, op. cit., p. 104.

¹⁷Ibid., p. 106.

If the possibilities of video tape are as promising as Becker, Bowers, and Granbeck describe, then ideas taken from their study and attributed to the speech in a fundamentals class may be helpful to the student and at the same time less time consuming for the teacher.

From the Review of Literature it is apparent that there is little agreement on the use of video tape in the classroom situation. Reports have been inconsistent on many aspects of video tape study. The confusion begins with Becker, Crane, and Brown reporting that self-evaluation via video tape provides the student with the necessary feedback to develop a realistic concept of his speaker performance. They strengthen their statement by adding that video tape helped to improve the student's memory of their past performance by pointing out weaknesses which they may have forgotten during the time span. The value of video tape was advanced by Bradley when he quoted a Purdue University Study stating that 72% of the responses to a questionnaire indicated the playback aided "very much."

McCroskey and Lashbrook reported results both pro and con to the value of video tape in the educational environment. They found that students viewing video tape were significantly lower in content retained when compared to a traditional group. However, they found that students in the video tape group were significantly higher in the learning process. They concluded that the video tape system could be employed positively and that it can not totally replace the criticism of the instructor and the students of the class.

Bradley reported that there were no significant advancements in the student's ability to recall the theoretical principles taught in a speech

course and there were no marked advancements in student's speaking ability when video tape is employed. He did conclude that video tape has a significant effect on the attitude of students toward the speech course.

Becker, Bowers, and Gronbeck reported that even though video tape is an expensive educational item, the students preferred it to the conventional method of teaching. In addition, they urged further studies to help solve the problems of expensive operation and man-power requirements.

The questions surrounding the use of video tape in the classroom situation are mounting and the experimental studies in the field of speech are only beginning to scratch the surface of the knowledge still waiting to be uncovered. The Review of Literature has reported the conflicts which still remain in the field of video tape research. Each study urged additional work to be done if the true worth of video tape is to be realized.

Theoretical Bases

Previous research in the area of video tape and the speech student has dealt with such topics as Diaker, Crane, and Brown's student self-concept and personality needs, Nelson's student attitude change, and McCroskey and Lashbrook's content retention. With past research in these individual areas, the present study was designed to test the student's total speaking ability after being introduced to one of two methods of self-evaluation via video tape. A similar study was completed by Becker, Bowers, and Gronbeck in the area of discussion technique. Their study experimented with the total student change resulting from added criticism after video taping a discussion panel. The present study

will attempt to test the change in the student's total speaking ability during a quarter of Speech 131. "Total speaking ability" was selected as the criteria for evaluation because the final grade of the quarter is based on that ability. A total grade is given to the student rather than having individual grades given for content, for organization, for reasoning, for delivery, etc.

Hypothesis of Study

From the above discussion, the following hypothesis was developed:
Student self-evaluation in conjunction with an audio critique by the teacher during the playback of the video tape will demonstrate higher speaking performance than student-self-evaluation by video tape and a written critique by the teacher.

Styles of Self-Evaluation

Past research has demonstrated that students using video tape and self-evaluation teamed with teacher criticism rank higher in their final speaking performance than students who have used the conventional method of classroom presentation. Therefore, with the evidence already available to indicate the use of video tape over the conventional classroom method, this study measured the difference between the video tape and audio critique method and the video tape only method.

Under investigation are two methods. The first is a method of allowing a student to view the pre-recorded video tape while possessing a written critique. The second method allows the student to analyze his speech while listening to a pre-recorded audio critique made by the

professor at the time of the originally presented speech and as he simultaneously views the pre-recorded video tape. With the presence of audio tape, the written critique was not the primary source for the professor's critique as it was in the first method, but it did offer secondary evaluation.

The purpose of the study was to compare the advancement in speaking performances of the group using the video tape-audio critique and the video tape-written critique. The two methods, in other words, were compared to determine if the direct, complimentary teacher-feedback style resulted in more student speaking advancement than the secondary method of video tape and a separate written critique.

It should be noted that the audio critique of the teacher was not individually compared with the written critique. The two methods were compared by taking the video tape and written critique together as Group I and the video tape-oral critique as Group II. All findings were based on the total method used rather than on individual elements of each method.

Limitations of the Study

The procedure for selecting the experimental subjects was a forced random sample. Computer selection was used for original assignment of students to the various sections of Fundamentals of Speech I. The speech program's beginning course is required of all graduates unless they fulfill the requirement by proficiency or high school exemption. Only a few students have graduated without taking the course. Ultimately, selection was controlled by such items as conflicts with other classes scheduled at the same hour. However, the students in each class also had

been randomly placed there by their own selections of time, etc., and by computer assignment. It was necessary to use forced selection of classes because of the total number of students being used, the "single-teacher" advantage, and the length of time the procedure required.

Another limitation of the study centered around the judges to be used on the pretest and the post-test. Such possible affective factors as judge fatigue, judge reliability, and judge evaluation were present in this study the same as they had been in other research designs noted. However, as described in the following chapter, certain restrictions and checks were built into the design to help limit the variance created by the selection and use of judges.

When considering a study of this type or institution of this size operating under its institutional rules and restrictions, it is impossible to treat hundreds of students in the experiment. One of the limitations of the study was the number of classes used. Forty-two students, members of two classes taught by the same professor, were subjects in the experiment over the period of three months. Due to the number of speeches being evaluated, class assignments, and other external factors, it was impossible to use the same judges for all the groups.

Summary of Chapter One

Past research has concluded that video tape may be extremely useful in the classroom if certain procedures are followed. Most researchers agree that video tape is a meaningful medium for critiquing student speeches. However, the best format for such critiquing procedures remains undetermined by video tape researchers. Reports by Dieker, Crane, and

Brown along with findings by McCroskey and Lechbrook suggest that some form of criticism offered by the professor or fellow students is best. Deihl, Breen, and Larson strengthen the findings of the researchers mentioned above with the report that video tape developed fewer non-fluencies in the speech patterns of all students tested in the six groups. However, with the addition of teacher criticism in the fourth group, the nonfluencies disappeared at a significantly faster rate.

Two elements of time become major concerns when professor criticism is added to the medium. Consideration must be given to the best time to introduce the criticism to the student, and the length of class time or extra-curricular time to be devoted to criticism of the speech. With specific requirements placed on the amount of content covered by the professor during a quarter, time is at a premium. Outside criticism via pre-recorded means may be one answer to the problem.

The present study proposes to test the use of pre-recorded criticism by the professor teamed with the student's self-evaluation of the taped speech. This method will be compared with a more traditional format of student self-evaluation via video tape after reading a written critique prepared by the professor.

Outline of Remaining Chapters

With Chapter One containing the Review of Literature, the second chapter reports the method and procedures. Included in the chapter are the selection of students utilized, the setting of the experiment, the accumulation of the data, and the treatment procedure of the data.

Chapter Three reports the data and results gained from the experiment. Included are scores gained from the judges' evaluation, the treatment of the data, and the results gained from the data.

The final chapter presents a brief review of the literature, a discussion on the theoretical implications, the practical implications of the present study's results, and the suggestions for further study.

CHAPTER II

METHOD

Selection of Subjects

Two basic speech classes taught by the same professor were selected from the Spring Quarter schedule of Speech 131 sections being offered by Eastern Illinois University's Speech Department. The selection was partially determined by the availability of classes being taught by the same professor, the consent of the professors to participate in the experiment, and the availability of rooms with the required equipment. The two classes were scheduled to meet in the same room, under the same professor, and with one class directly following the other in the time schedule. Each class had twenty-one students enrolled. This helped to equalize time factors involved with the progression through assignments.

Students scheduled for each of the classes had been programmed into the sections by the university computer system. It was determined that for purposes of random selection the university computer was the best method of obtaining such a goal. The students in the two classes of Speech 131 ranged from Freshman to Junior in class ranking, from first quarter Freshmen to ex-Viet Nam veterans and housewives, and held a varied background of interests and planned college majors.

Control of Instructor Variables

In establishing the procedure to be followed in this investigation,

it was determined that one of the most pressing and urgent variables to be controlled was that of the professor in the classroom. In consideration of this control one professor, teaching two classes of Speech 131, was selected. The one-teacher concept lessened the probability that such variables as differences in lecture content, differences in format presentations to the classroom, and differences in individual teaching habits and techniques would be present in the investigation. In addition, the classes selected to participate in the study were scheduled during consecutive hours. The first class (Group I) met at one o'clock in the afternoon and the second class (Group II) met immediately following at two o'clock. This factor helped the professor to co-ordinate the programs not only from day to day, but from hour to hour. In other words, content covered in the one o'clock class was fresh in the professor's mind during the two o'clock session.

THE EXPERIMENT

During the course of the quarter, an introduction speech and six assigned speeches were given by each student enrolled in each class. The six regularly assigned speeches were graded by the teacher. The introduction speech was not graded and the students were informed before the speaking session that the speech would not be graded. One discussion panel was included in the quarter's activities, but it was not included in the research study. The discussion group was mandatory because of the Speech Department's requirements for Speech 131 content. The students were participating in regular speech class assignments.

Never during the coases were the students told that they were participating in a study.

The Assigned Speeches

A brief introduction speech lasting one minute was assigned the students on the first day of class. As Nelson recommended,¹⁸ this speech was designed to give the students an opportunity to get on their feet and to talk to the class before the actual testing began. Starting with the fourth day of class, a three to five minute informative speech was given by each student. These speeches were stored on video tape as were the final speeches at the end of the quarter. The last speech was identical to the first in that it also was a three to five minute informative speech. The informative speech format was chosen because the first speech could be assigned to the students early in the quarter with only one class period necessary for explanation and lecturing on the informative speech development. The small amount of lecture time given on the first informative speech was designed to test the performance of the students before much instruction had been received. (Hereafter, to eliminate excessive word usage, the first speech of the quarter will be known as the "pretest speech" and the final speech as the "post-test speech.")

Experimental Group Design

Depending upon the section, students followed one of two methods. Group I was selected to receive the video tape and written critique method

¹⁸Harold E. Nelson, "Videotaping the Speech Course," Speech Teacher, 17:101, March, 1968.

of instruction, while Group II was to receive the video tape and oral critique method. Group I would give a series of speeches in the classroom, receive a written critique from the professor immediately following the class hour, and then view the tape during free time, after having the opportunity to review the written critique.

Group II gave the identical series of assignments during the classroom period, received a written critique from the professor, was given time to review the critique outside the classroom, and then reviewed the video tape while listening to a synchronized oral critique to the video tape. The oral critique was recorded in the classroom by the professor while the student was giving the original speech. The professor used a real-to-real tape recorder and a hand-held microphone. He was located in the rear of the classroom during the taping session.

Checks were made throughout the academic term to determine that all students were utilizing the self-criticism facility. This check system consisted of a sheet signed by each student at the time his video tape was re-played. The sheet was located in the video tape control room where all students had to report before seeing their video tape.

In summary, each student in both groups was giving a speech, receiving a written critique, and then witnessing the playback of the video taped speech. In addition, the students in Group II received an audio critique from the professor during the video tape playback.

Setting for the Experiment

The equipment used in the study consisted of a classroom in the Speech Department which was equipped with a Shibusden video tape camera

with a pentilt head Model RM-26 and remote control Model RC-101. The camera was located on the ceiling at the opposite end of the room from the speaker. The signal from the classroom was transmitted to the control room of the video tape complex located down the hall. In the control room a trained worker was operating the remote controls of the Shibaden RM-26 and RC-101. The video tape machines used in the experiment were Shibaden one-half inch, black and white video tape recorders Model SV-7000.

The classroom was equipped with a Shure microphone located on the ceiling directly over the position of the speaker. The audio signal was sent directly to the video tape recorder in the control room.

After the speeches were recorded, the tape was stored in the control room library until the student requested playback. At that time the tape was placed on the video tape machines and remotely re-played to one of five individual viewing booths located in the complex. Each booth contained a Shibaden VM-163 video monitor which was used for playback. Also contained in one of the booths was a Wollensak 1500SS audio tape recorder. The audio recorder was used to re-play the audio critique recorded by the professor in the classroom at the time the original presentation of Group II's speeches. A headphone was hooked to the tape recorder allowing the student to hear the audio critique through the headset while listening on the video monitor to the original speech.

The video tape and the audio critique were synchronized together by the use of an audio cue given before each speech. The audio cue consisted of a student in the class announcing the speaker's name before the speech

began. When the video tape was replayed, the audio tape was started immediately upon the student's name being heard on the video monitor.

Collection of Data

The post-test speech was recorded during the final week of the quarter. The pre-test and post-test speeches were scrambled and shown to a panel of judges to be graded. The twelve judges all had university teaching experience in the Speech 131 program at Eastern Illinois University. The twelve judges were randomly paired and assigned to evaluate various sections of the students' video taped pretest and post-test speeches. Each judge rated the pretest and post-test of the same student. A scrambling procedure prevented the judge from determining which speech was the pretest speech and which was the post-test speech.

The classes of students were divided into six sections with three sections from the video tape and written critique class (Group I) and three sections from the video tape and oral critique class (Group II). Each section contained both the pretest speech and the post-test speech for each student in the section. The judges had no knowledge as to what group, Group I or Group II, was being judged by his fellow judge and himself. Each pair of judges then rated the speeches of the group they were assigned. The judging scale was a simple thirteen point scale ranging as shown below:

F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
1	2	3	4	5	6	7	8	9	10	11	12	13

The judges graded the speech on a letter basis and the letter grades were transformed later to numerical form for purposes of evaluation.

STATISTICAL TREATMENT OF DATA

Tests on the data obtained from the judges' grading were evaluated by three different statistical designs. These tests included:

(1) Analysis of Variance--Two-Factor Mixed Design; Repeated Measures on One Factor.

(2) T-Test for Related Measures.

(3) T-Test for a Difference Between Two Independent Means.

Analysis of Variance--Two-Factor Mixed Design; Repeated Measures on One Factor

Because of the use of two groups (Group I and Group II) and of the use of two time periods for testing (pretest speech and post-test speech) the analysis of the individual cells of the experimental investigation were simultaneously computed by the Analysis of Variance--Two Factor Mixed Design; Repeated Measures on One Factor. Bruning and Kintz write of the design:

Since measures are recorded over several successive test periods, this design permits (1) comparison of the overall performance of the experimental groups (as in the completely randomized design), (2) evaluation of performance changes from one measuring period to the next (as in the treatments-by-subject design), and (3) evaluation of the treatment effects in relation to the passage of time between measuring periods.¹⁹

For instance, this design allowed for the testing of variance between Group I and its pretest and post-test, between Group II and its pretest and post-test, between the total pretests (Group I plus Group II) and the

¹⁹James L. Bruning and B.L. Kintz, Computational Handbook of Statistics (Glenview, Ill.: Scott, Foresman, and Company, 1968), p. 9.

total post-tests (Group I plus Group II). Also, it allowed for the testing of variance between the total trials of Group I (pretest to post-test) and the total trials of Group II (pretest to post-test). If significance of variance exists in the experiment, it should be determined by this design. In addition, individual t-tests were included to locate significant differences. The t-tests helped to determine between which cells differences were significant and if those differences were consistent across other dimensions of the statistical design (test on interaction).

T-Test for Related Measures

The T-Test for Related Measures was included in the statistical treatment of the data. This test provides for determining the existence of any significant difference between two correlated means.²⁰ Individual t-tests between related means (pretest to post-test for each group) was the measuring instrument used in this situation. It was used because each student's score on the pretest was being directly compared to his score on the post-test. Therefore, difference was measured between the two testing dates (pretest and post-test) to determine if any significant shift had taken place.

T-Test for a Difference Between Two Independent Means

The T-Test for a Difference Between Two Independent Means was used for the computations regarding:

²⁰Ibid., p. 12.

(1) Test for significance between the pretest of Group I and the pretest of Group II and between the post-test of Group I and the post-test of Group II.

(2) Test for significance between the difference-scores (pretest minus post-test scores) of Group I and the difference-scores of Group II.

The first t-test for independent means was used in conjunction with the related means t-test. Both independent and related t-tests were used to further locate any difference detected by the analysis of variance. The t-test for independent means determined whether the difference between the two groups was significant.²¹ In other words, the pretest speech and the post-test speech of Group I could be compared to the pretest speech and the post-test speech of Group II to determine if any significant difference was found between the two classes.

The final use of the t-test for independent means was to determine if any significant difference appeared between the difference-scores of Group I and the difference-scores of Group II. Difference-scores are computed by subtracting the numerical rating of a student's pretest score from the numerical rating of the post-test. By computing the difference-score, advancement or regression of a student's speaking ability during the course may be computed. This t-test was used to determine if one class and treatment significantly advanced beyond the other class and treatment.

Summary of Chapter Two

The experiment dealt with one professor teaching two sections of

²¹Ibid., p. 9.

Speech 131 during the Spring Quarter of 1971. Students enrolled in the two sections of the required speech course were the subjects used in the experiment. Each section had twenty-one students enrolled which brought the total number of subjects to forty-two. The professor used in the study was a variable that had to remain constant throughout the entire experiment. For that reason, one professor was used to teach both of the classes. The lecture format was also controlled by using only one professor.

Six assigned speeches were included in the format of the courses during the quarter of Speech 131. The first speech and the last speech of the quarter were video taped for later evaluation by a panel of judges. The four assigned speeches other than the first speech and the last speech were video taped and re-played for the students but were not graded by the judges. It was during playback of the four other assigned speeches that the elements of the experiment under study were introduced to the students.

In the experiment, Group I received the video tape and written critique method while Group II received the video tape and oral critique format. Students in Group I viewed the video tape with only the outside assistance of the written critique given to them by the professor immediately following the actual presentation. Group II viewed the video tape and simultaneously listened to an audio critique prepared by the professor during the original speaking session.

The first and last speeches of each student were scrambled to assure that no judge had the knowledge of which speech he was rating

during the evaluation session. Each judge viewed the pretest and post-test speeches of the students assigned to the division he was evaluating. The judges worked in pairs with each judge grading the student's pretest and post-test speech. After all speeches had been graded by the judges, three statistical treatments were tested on the data. These treatments included (1) Analysis of Variance--Two-Factor Mixed Design: Repeated Measures on One Factor, (2) T-Test for Related Measures, and (3) T-Test for a Difference Between Two Independent Means.

CHAPTER III

RESULTS

Statistical Results

Four statistical designs were used to evaluate the raw scores and the difference-scores obtained from the investigation. These designs included:

- (1) Analysis of Variance—Two-Factor Mixed Design: Repeated Measures on One Factor.
- (2) T-Test on related means between pretest score and post-test score of each individual group.
- (3) T-Test on independent means between the pretest scores of Group I and Group II and the post-test scores of Group I and Group II.
- (4) T-Test on pretest to post-test difference-scores of Group I and Group II.

Analysis of Variance

The analysis of variance permits several statistical results to be concluded from the raw scores. First, the design compares variance between the conditions of the experiment. In the present study, the conditions of the experiment were the video tape and written critique of Group I and the video tape and oral critique of Group II. The analysis of variance found a significance existing between the groups. With a

mean square of 52.999, the f-value was computed to be 11.353 and was significant at the .005 level. Secondly, the variance between the trials (pretest to post-test) for each group was computed. An f-value of 1.878 and a mean square of 7.714 was computed for the trials. The f-value of 1.878 does not become significant until the .2 level. Finally, the design tested for interaction between the trials and conditions of the investigation. The interaction test computed a mean square of -15.236 and an f-value of -3.709. The f-value was significant at the .1 level. This means that the variance between the groups was significant, but that no meaningful significance was found between the trials or trials and conditions interaction.

TABLE 1
ANALYSIS OF VARIANCE--TWO-FACTOR MIXED DESIGN:
REPEATED MEASURES ON ONE FACTOR

	SS	df	MS	f	p
Total	776.477	167	---	---	---
Between subjects	496.477	95	---	---	---
Conditions (Groups I and II)	52.999	1	52.999	11.353	.005*
Error _b	443.478	94	4.718	---	---
Within subjects	280.000	72	---	---	---
Trials (Pretest and post-test scores)	7.714	1	7.714	1.878	.2
Trials x conditions	-15.236	1	-15.236	-3.709	.1
Error _w	287.522	70	4.107	---	---

*Significance at .05
N=84 total (42 scores in each group)

Since the level of significance being used in the investigation was pre-determined at the .05 level, the significance level for the trials (.2) and the significance level for the interaction (.1) were not considered meaningfully significant results. The f-value of 11.353 for the variance of the conditions was significant at the .05 level. The analysis of variance indicated significant variance on the trials but not on the conditions or the interaction. To further isolate difference between individual calls (pretest and post-test of Group I and Group II) several t-tests were utilized. The t-test on related means, on independent means, both for raw scores and for difference-scores were computed when appropriate.

T-Test on Related Means

TABLE 2

T-TEST ON RELATED MEANS BETWEEN PRETEST SCORE AND POST-TEST SCORE OF EACH INDIVIDUAL GROUP

	Pretest	Post-test	t-value
Group I	$\bar{x}_1 = 5.333$	$\bar{x}_1 = 4.928$.980 (NS)
Group II	$\bar{x}_2 = 5.714$	$\bar{x}_2 = 6.595$	-.319 (NS)

N=84 total (42 scores in each group)

This design tested for difference between the raw scores on the pretest mean and the post-test mean for each group. The mean of the pretest scores for Group I was computed at 5.333 and the mean of the post-test scores for Group I was 4.928. Using the .05 level of significance,

the t-value of .980 was not significant. The means of Group II were 5.714 on the pretest scores and 6.565 on the post-test scores. The t-value of -.319 was not significant at the .05 level. From these findings, the t-test for difference between trials was not significant for either group. In other words, there was no significant speaking advancement by either group from the pretest score to the post-test score.

T-Test on Independent Means

TABLE 3

T-TEST ON INDEPENDENT MEANS BETWEEN THE PRETEST SCORES
OF GROUP I AND GROUP II AND THE POST-TEST SCORES
OF GROUP I AND GROUP II

Group I	Pretests		t-value	Group I	Post-tests	
	Group I	Group II			Group I	Group II
$\bar{x}_1 = 5.333$	$\bar{x}_1 = 5.333$	$\bar{x}_2 = 5.714$.918 (NS)	$\bar{x}_1 = 4.928$	$\bar{x}_2 = 6.595$	2.566*

*Significance at .05
N=84 total (42 scores in each group)

Being computed by this design was the difference between the means of the pretest scores of both groups and the difference between the means of the post-test scores for both groups. The mean of the pretest scores for Group I was 5.333 and for Group II was 5.714. The resulting t-value of .918 was not significant at the .05 level. In the post-test computation, the mean of the scores in Group I was 4.928 and the mean of the scores in Group II was 6.595. The t-value of the post-test computation was 2.566 which was significant at the .05 level. The t-test on independent means revealed that no significant difference was found between the pretest

scores of Group I and the pretest scores of Group II. However, the t-test resulted in significant difference (2.566) between the post-test scores of Group I and the post-test scores of Group II. The results found no meaningful difference existing between the two groups at the time of the pretest score judging but that significant difference was present at the time of the post-test score evaluation.

T-Test on Difference-Scores

TABLE 4

T-TEST ON PRETEST TO POST-TEST DIFFERENCE-SCORES
OF GROUP I AND GROUP II

Group I	Group II	t-value
$\bar{x}_1 = -.047$	$\bar{x}_2 = .380$	1.678 (NS)
N=84 total (42 scores in each group)		

The difference-scores for each group was determined by subtracting each judge's numerical score given on the pretest evaluation from the numerical score given on the post-test rating. After a difference-score for each judge was computed, the t-test on difference-scores was utilized. Statistically, Group I had a mean difference-score of $-.047$ and Group II had a mean difference-score of $.380$. When the two difference-score means were compared, a t-value of 1.678 resulted. The t-value was found to be significant at the .1 level but not at the .05 level. The test of difference-scores indicated that the distance of shift between the groups approached, but did not reach significance.

The measured mean change that did occur, although not significantly, was in the opposite direction from the other group. Direction was reported by the mean scores of both groups. Group I had a mean score of 5.333 on the pretest and a mean score of 4.928 on the post-test. In Group I, the pretest mean score was higher than the post-test mean score and regression took place in the speaking ability of the student's during the quarter. In Group II, the pretest mean score was 5.714 and the post-test mean score advanced to 6.595. In addition, the mean difference-score of Group I was $-.047$ which denotes regression while the mean difference-score of Group II was $.880$ to the positive direction.

Conclusion of the Results

The following results were concluded from the investigation:

(1) The analysis of variance indicated a difference between the conditions (video tape and written critique and video tape and audio critique) used in the two groups (Group I and Group II), but the tests on the trials (pretest speech and post-test speech) and on the interaction indicated no significant difference. The analysis of variance concluded that there was a difference in the conditions, but that difference did not exist between the pretest speech and the post-test speech for Group I and Group II.

(2) T-test for change between the trials for each group was not significant for either of the groups. The t-test concluded that no difference in speaking ability developed for students in either group during the quarter.

(3) T-test for difference between the groups on the pretest scores showed no significance. The t-test concluded that the groups were not meaningfully different at the beginning of the experiment.

(4) T-test for difference between the groups on the post-test scores showed significance. The t-test concluded that a meaningful difference was present between the groups at the end of the experiment.

(5) The test on difference-scores indicated that the shift for each group from the pretest scores to the post-test scores was not significant. The t-test concluded that there was no meaningful shift in speaking ability between the pretest speech and the post-test speech of each condition.

(6) The measured mean change that did occur for each group was not significant, but it was in the opposite direction from the other group. In other words, Group II advanced during the quarter while Group I regressed.

CHAPTER IV

CONCLUSION

Summary

With video tape rapidly becoming a standard educational tool, research into the area is needed by both education and the specialized field of Speech-Communication. Teachers are subjecting their students to the electronic medium of video tape without understanding the assets and limitations of the medium. For this reason and because of the lack of research pointing to detailed results from past experiments with video tape and student self-evaluation, the present study was undertaken.

The combination of several articles and reports produced the justification for this study. Video tape, most researchers agree, held promise for education. However, they disagreed as to the exact method in which the medium should be utilized. The importance of the study was justified by the lack of research found in the area of video tape, self-evaluation and criticism via video tape, and the medium's application to the educational system.

Forty-two students enrolled in the Fundamentals of Speech 131 program at Eastern Illinois University during the Spring Quarter of 1971 were used in this investigation. All the students were enrolled in one of two sections of Speech 131 being taught by the same professor.

Students were scheduled into the classes by the usual procedure followed by the Registration Office and the University computer system.

Two groups were used in the experiment with Group I receiving the video tape and written critique method while Group II received the video tape and oral critique format. Group II used the procedure hypothesized as significantly superior to Group I's procedure. It was hypothesized that Group II would significantly advance beyond the first group because of the added dimension of the audio critique by the professor at the time of the video tape playback.

Excluding the introductory speech given before the pretest speech, six speeches plus a discussion were given by each student. Beginning with a speech presented on the fourth day of class (called the "pretest speech" in this study), each student in the two classes had six of his speeches video taped. Checks were included in the system to determine that all students were independently viewing the tapes for purposes of self-critiquing. The video recording of each student's pretest speech was stored until the post-test speech was completed at the end of the quarter. When all pretest and post-test speeches were finished and on video tape, the taped speeches were scrambled before being judged by a panel of professors.

Twelve judges were used in the evaluation of the pretest and the post-test speeches. Each 131 section taking part in the experiment was divided into three divisions with two judges rating each division. The judges were given a rating scale of thirteen points with a grade of F equaling one point and a grade of A+ equaling thirteen points.

THEORETICAL IMPLICATIONS

It was the purpose of this study to statistically test the hypothesis:

Student self-evaluation in conjunction with an audio critique by the teacher during the playback of the video tape will demonstrate higher speaking performance than student self-evaluation by video tape and a written critique by the teacher.

Theoretical Conclusions

From the statistical designs tested on the raw scores and the difference-scores obtained by the experiment the following theoretical conclusions have been reached.

(1) While not significant, difference did result between the two groups and their treatments. In fact, Group I regressed from the pretest speech to the post-test speech. However, the difference that did exist is unclear and not discernible by the statistical tools used in the experiment. The difference between the groups could have possibly been distorted by the number of subjects used in the experiment or the lack of discriminatory ability of the statistical tests applied to the scores.

(2) Inferences, not consistent in statistical significance, can be made on the available data obtained by the statistical designs. These inferences include:

First, the nature of the change between the two groups suggests that the positive shift from the pretest scores to the post-test scores of Group II could have been caused by a superior treatment. The audio critique given to the students in Group II while they viewed the video tape could have been the prominent factor for their group's advancement compared with the regression of Group I. This inference is strengthened

by the significance attained between the post-test scores of Group I and Group II. Again, the lack of consistent significance between this test and the interaction test of the analysis of variance prevent a more definite inference.

Secondly, the negative shift from the pretest scores of Group I to the post-test scores suggests that the treatment could have been (1) inferior to the treatment of Group II, and (2) the treatment of Group I could actually be a detriment to teaching the basic speech course.

(3) In the total analysis, the two theoretical conclusions listed above do not statistically support the hypothesis of the present investigation. With the inconsistency of significance with the four statistical tests, no valid conclusion may be drawn to support the hypothesis. The statistical tests were the raw score designs of the analysis of variance, the t-test on related means, and the t-test on independent means. Also used was the t-test of the difference scores of the two groups. It should be made clear at this time that all theoretical conclusions of this study have been developed according to partial statistical support and inferential trends rather than fully statistically significant results. The results show difference trends between the two conditions (the video tape and written critique of Group I and the video tape and audio critique of Group II) tested in the experiment but none of the conclusions were firmly based on statistical significance.

The inferences made on the statistical results of the experiment could have been completely valid if the analysis of variance's

interaction test had reached significance at the .05 level rather than at the .1 level. The .1 level of significance shows that the results from this experiment can be expected to occur only ninety out of one-hundred times. The probability on this one test dimension prevents the confident support of the major hypothesis of this study. While close, the significance level was not .05 which is the minimum level typically allowed for valid inferences of this type.

PRACTICAL IMPLICATIONS

From the theoretical conclusions drawn above, the following practical implications may be made. The first implication states that because a difference did result between the speaking of Group I and that of Group II, the treatment given to Group II is superior to that of Group I. The mean difference is quite small, however, in this study. Past research findings by Diehl, Green, and Larson along with findings by Becker, Bowers, and Gronbeck are tentatively supported by the present research. Both teams of investigators found that the addition of criticism with the video tape playback advanced the students beyond the application of video tape only.

First, Diehl, Green, and Larson concluded that students can not use video tape as effectively when criticism by the professor is omitted. However, they did conclude that video tape was superior to the traditional teaching method. Secondly, Becker, Bowers, and Gronbeck reported that using video tape and criticism helped their students to acquire sensitivity to discussion techniques beyond that of the traditional method or video tape only.

The second implication is that video tape replay by itself is an inferior method and that it may be a detriment to the teaching of speech. This implication tentatively supports Bradley's findings that students viewing video tape without teacher criticism ranked lower in the ability to recall principles and to advance their speaking ability than did students in the traditional group or the video tape and criticism group. Evidence points to the fact that some form of criticism is needed by the student other than criticism provided in the privacy of his own mind. McCroskey and Lashbrook's findings stated that the lack of criticism by the professor and fellow students suppress the student's ability to achieve. They found that students in a video tape only section were actually lower in content retained than were students in the traditional method or in the video tape and criticism method.

The inconsistent results reported in this study leave the questions unanswered by this study. However, while not attaining significance, the present study shows a definite trend favoring a method of using video tape without destroying the classroom atmosphere. Secondly, a trend of this study shows improvement of students' speaking habits without relying heavily on the classroom time and technical personnel. Finally, a trend also favors audio critique by the professor as one method of solving the problem of having too little time available in the classroom for purposes of criticism. Whatever the final answers may be, the fact remains that more research is needed in the field of video tape and student self-evaluation.

Suggestions for Further Study

Video tape research must continue if the field of education is going to realize the full potential of the electronic medium. The suggestions for further study are listed below:

1. The length of time required for rapid advancement in speaking ability.

Perhaps, the ten-week quarter is not long enough for a student to grasp the theories of Speech-Communication and to be able to apply the theories to his personal speech pattern. This problem may have been one reason for the lack of advancement by the students in the present study.

2. Effectiveness of the basic speech course when considering the student's speaking ability.

Many colleges require such a course of all graduates but does such a course benefit the student enough to justify the requirement.

3. Criticism during class time compared with criticism during the video tape playback.

The problem of class time is always in need of an answer. The present study made an attempt to find one solution to the problem, but other methods of eliminating wasted class time are in urgent need of investigation.

4. Limiting production costs and man-power requirements.

A solution to all the other problems of video tape may be reached, but it must be applicable to the classroom situation and man-power limitations before any of the solutions may be put into productive use.

5. Replication of the present study.

A final suggestion would be the replication of the present study to determine if significant results could be obtained. By varying an element of the present investigation, significant results may be obtained. The procedure used in the investigation seemed to be workable and qualified. Further investigations may find some factor over looked in the present procedure.

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APPENDIX

INTRODUCTION SPEECH

Mr. Wiley

- (1) The purpose of this speech will be to introduce yourself to the other members of the class.
 - (2) You may choose to cover why you are here at Eastern,
Your major and minor,
Your goals in life,
Your high school accomplishments, or
etc.
 - (3) Time: 1 minute
 - (4) It will not be graded.
-

First Speech--Informative

- (1) The purpose of this speech will be to inform the class on a topic of your choosing.
- (2) The speech to inform or to explain does not attempt to persuade change in existing ideas or actions.
- (3) Types of informative speeches include:
 - (A) A process
 - (B) A product
 - (C) An organization
 - (D) A concept
 - (E) Reports on articles, speeches, or events
- (4) A speech should be developed which will allow you to cover the topic in 3 to 5 minutes.
- (5) DON'T TRY TO COVER TOO BROAD A TOPIC IN THE TIME ALLOWED.
- (6) The speech will be graded.

Judge _____

Student _____

Section _____

Room _____

CIRCLE over-all grade given on speech.

F D- D D+ C- C C+ B- B B+ A- A A+

After tests are over, please place evaluation sheets in my mailbox or give the sheets to the worker in the T.V. Room.

Thank you for your assistance, and see you during the summer.
(Unless you have other plans).