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THE EFFECTIVENESS OF TELEVISION TEACHING OF AMERICAN
GOVERNMENT COMPARED WITH REGULAR CLASSES IN
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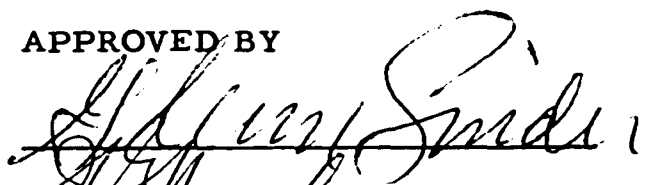
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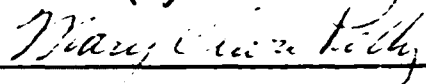
BY
VICTOR WARREN JANTZEN

1963

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APPROVED BY



DISSERTATION COMMITTEE

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CHAPTER I

THE PROBLEM: ITS PURPOSE AND DEFINITION

Introduction

Television made its appearance in education in 1932 at Iowa State University, but it was first used for formal instruction in 1953. By 1960 half a million school and college students were receiving regular instruction.¹ Today nearly 1,000 school systems all over the United States are using television regularly in their instructional programs.² This rapid acceptance of a new medium for instruction meant using any and all kinds of equipment in any room available for the purpose.

According to Eckhauser,³ television is going to have a far-reaching effect on our life, and the life of our community, our nation,

¹Dave Chapman, Design for Educational Television (New York: Educational Facilities Laboratories, 1960), p. 12.

²Mary Howard Smith, Using Television in the Classroom (New York: McGraw-Hill Book Company, Inc., 1961), p. 15.

³Irwin A. Eckhauser, "Schools Need Educational Television," The Social Studies, Vol. No. 7, (December, 1959), pp. 257 and 258.

and the world. The author further indicated that the reason was clear since television is a medium of mass communication which far surpasses in effectiveness anything our civilization has ever known. He felt that through educational television, there is a great opportunity to provide new kinds of services as well as more effective services within schools, colleges, and other educational agencies. Television can make a better informed citizenry and be a powerful instrument for the furtherance of American Democracy and effective government. The televised Kefauver crime hearings in New York were a spectacular example of the power of television in informing the electorate. Millions of people were made more vividly aware of crime problems and their responsibilities as citizens.

As school people became more adjusted to the medium and came to regard it as a permanent tool of education, they became concerned about the environment in which television could be employed most effectively. There is also a concern that our standards of education must not only be maintained but improved. As of this moment, there are more students to be educated than we can handle effectively by current techniques of teaching and administration and the pressure of sheer numbers promises to get worse, not better in the future. By 1965 it is estimated that public school enrollment will top 41 million, while the national population grows to more than 190 million.¹ Most major schools, colleges,

¹Chapman, loc. cit., p. 2.

and universities will likely have at least one closed circuit television system by 1971. There will probably not be many school children who are not exposed to educational television, but it will be used in some subjects and at some levels more than others.¹ Both the procedures and facilities of education must be re-evaluated in the light of current and future needs and demands.

Both quality and quantity of our teaching force have grown enormously in the last 25 years, but the size of the teaching force has not kept pace with the demand of the exploding student population. There is no indication at present that there will be an adequate increase in the number of teachers available to match the spiral of enrollment figures clearly calculated for the years to come. Major changes in the pattern of utilization of our teaching force will take place in response to the pressing demand of the situation. Most experts² agree that educational television as a direct teaching method calls for further experimentation before its full potential can be realized. The social studies curriculum offers vast opportunities to test the educational television medium as a means of developing powers of reflective thinking and skills in problem solving.

¹ Stanford: The Institute for Communications Research, Educational Television, the Next Ten Years, Stanford University, Stanford, California, 1962, p. 33.

²John P. Lundstrom and Others, "The Changing Social Studies Curriculum," Audio Visual Instruction, Vol. VI, No. 8, (October, 1961), p. 385.

Carpenter¹ asked the following questions concerning television teaching in the Institute for Communications Research in 1960.

To what degree or within what limits does television as an instrument have important capabilities for mediating significant educational influences? More specifically, what are the potentials of television for providing and regulating both general and specific conditions for learning? To what extent can television be employed for increasing the effectiveness of learning and development of the individuals? What are the effects on learning of teaching by television as compared to a wide range of comparable conventional arrangements?

Siepmann² said one obvious fact needs to be underscored. There is nothing that we know now about educational television that we don't need to know more amply, with greater assurance and in reference to the more varied, specific situations. There is a further need in that the uses of television should be subjected to more scientific proof.

Background of the Study

Television teaching was inaugurated in the Wichita Public Schools through the Ford Foundation Project in 1958. In an attempt to learn about teaching large groups and teaching by television, a limited amount of such teaching was done in an intermediate school and a high school.

¹C.R. Carpenter, New Teaching Aids for the American Classroom, Report on the Symposium on State of Research of Instructional Television and Tutorial Machines, (United States Office of Education and Stanford University, November 13 and 14, 1959), pp. 75 and 80.

²Charles A. Siepmann, T V and Our School Crisis (New York: Dodd, Mead and Company, 1958), p. 144.

Beginning with the second semester, one lesson a week in American History by television was presented to 180 students in one high school. Valid comparisons in performance between television classes and control classes were not possible since the instruction was so limited and significant variables were uncontrolled. However, in the tests that were given, there was no significant difference in the performance of the groups.

During the summer of 1959, the Director of Research for the Wichita Public Schools in cooperation with the Educational Television Project Staff designed a program of measurement and evaluation of the experiment for the 1959-60 school year. Test data for the secondary school projects were obtained at the beginning and end of the respective courses. At Wichita High School South, a studio was set up and classes were taught in American History, American Government, and Driver Education by closed circuit television. All instruction was received by television and in a large classroom follow-up procedure.

Wichita High School South pupils served as the experimental population for the entire study. The two control schools were selected because of their proximity to the experimental school and because of the type of programs offered. The social studies department at Wichita High School West tends to utilize the more traditional methods of instruction, while this department at Wichita High School Southeast inclined to an experimental and a problem-solving approach. For this reason tests of

significance were computed for all three groups in American Government in an attempt to determine the relative effectiveness of each method. The relative importance of many variables were not measured in this study, such as attitude of teachers, their methods, their basic philosophies, their ways of presenting material, their experience, their subject background. No attempt was made to equate socio-economic groups. The control groups of both schools, Wichita High School West and Wichita High School Southeast, were taught in conventional classroom situations while the experimental groups at Wichita High School South were taught through the use of television sets for all formal presentations with a follow-up teacher in the large classroom to conduct discussions and answer questions concerning the presentation after the telecast. The results of the tests given indicated that the conventional classroom delivered instruction more effectively than that of television instruction.

In the spring of 1961, a further study was made in the social studies area concerning the effectiveness of television teaching. Past studies of the effectiveness of television instruction in the Wichita Public Schools encompassed either full year or semester courses. This approach has always made it extremely difficult to adequately define the goals or describe the activities presumed to contribute to these goals. For these reasons the investigator limited this study to a three week project in American History. The analysis of this study revealed a difference in favor of the experimental (educational television) group

significant at the .01 level of confidence.

With the information obtained from these studies and other related studies, it was recommended in the annual report of the Research Department of the Wichita Public Schools for the 1959-60 year, "That further study is needed to discover the organizational and instruction procedures that contribute most to the effective use of educational television."

Because of the many problems facing the Superintendent of Schools and the Board of Education, a Citizens' Committee on Educational Television was selected and formed on July 16, 1959, to study and determine if the Wichita Schools should include educational television as a part of their educational program. The committee, after a lengthy study, recommended strong consideration of the establishment and operation of an educational television station as a tool for education, but that the decision be determined on the basis of economic factors involved as well as the educational and aesthetic values. It was also stated that the program should never be considered as something that would save money or reduce expenditures because it was definitely established that this would not be the case. The committee estimated that the first year's operation would be in excess of \$500,000.

Statement of the Problem

The problem was to determine the effectiveness of television teaching of American Government in Wichita High School South in

comparison with that of classes utilizing conventional instructional practices in the same school. More specifically, this study also attempted to determine if there was any significant difference in student achievement in each of the five units in the course taught by television as compared to these units taught in regular classes.

The experiment was carried out to test the following general null hypothesis: there is no significant difference in the gain of knowledge in American Government by high school seniors who are taught American Government by the conventional classroom teaching method and that of students taught by television. Five null subhypotheses were also tested at the .05 level of confidence. These are:

H_{0_1} There is no statistically significant mean difference in gains between students being taught by television or the regular classroom method with regard to the unit in American Government on National Government.

H_{0_2} There is no statistically significant mean difference in gains between students being taught by television or the regular classroom method with regard to the unit in American Government on Local Government.

H_{0_3} There is no statistically significant mean difference in gains between students being taught by television or the regular classroom method with regard to the unit in American Government on Political Parties.

H_{04} There is no statistically significant mean difference in gains between students being taught by television or the regular classroom method with regard to the unit in American Government on Taxation.

H_{05} There is no statistically significant mean difference in gains between students being taught by television or the regular classroom method with regard to the unit in American Government on Civil Liberties.

Major Assumptions

These major assumptions were made in this study.

1. That the Cooperative School and College Ability Test, (form 2A) was an appropriate instrument to use for equating the two groups of students.
2. That the Social Studies section (form B) of the Sequential Tests of Educational Progress was an appropriate instrument to use as a pretest for the experiment.
3. That the High School Civics Test, (form B) from the United States Armed Forces Institute was an appropriate instrument to use as a pretest for the experiment.
4. That the teacher-prepared tests were appropriate instruments to measure student achievement of American Government in each unit presented.

5. That the Social Studies section (form A) of the Sequential Tests of Educational Progress was an appropriate instrument to use as a post-test for the experiment.
6. That the High School Civics Test, (form B) of the United States Armed Forces Institute was an appropriate instrument to use as a post-test for the experiment.

Delimitation of the Study

The study was delimited to the two regular classes of American Government which totaled 68 students and one American Government class taught by television having 97 students. All classes were conducted at Wichita High School South for the second semester of the 1961-62 school year. The text used in both classes was The People Govern by Lawrence G. Paquin and Marion D. Irish, published by Charles Scribner and Sons, New York, 1954.

The scope of the study did not consider such variables as race, family incomes, interests, motivation, student work load, personality, emotional stability, church membership, and high school grades. However, a brief description of the community and students is given: The socio-economic level of the school community for Wichita High School South was considered to be an average to slightly above average level. At least 50 per cent of the parents were employed in one of the aircraft factories or firms that do subcontract work for them and 97 per cent of

the students were from the white race: The remainder were of Indian, Oriental, Negro, and Mexican origin. Many of the students had part-time employment outside the school and at least 60 per cent were affiliated with a church. The ability of the students as a whole tended to cluster around the average. There was about an equal number of academically talented and low ability pupils in the school population.

Definition of Terms

Television class refers to the class which received its primary instruction from a television receiver. A live telecast originated for each presentation for a period of approximately 20 minutes by a qualified American Government teacher. Panel discussions and interviews with special speakers were also provided at various and appropriate times on the telecast. During the "follow-up" procedure in the large room, which was under the jurisdiction of another qualified American Government teacher, questions and answers were entertained and discussions held on the topics presented by the telecaster. Tests were also given on occasion at this time, or in the case of lengthy testing periods, the telecast was not presented on that particular day.

Regular class refers to regularly equipped high school classes taught by a certified American Government teacher not using television in any way.

Method of Study

This study utilized data from previous studies mentioned and was conducted in part utilizing the same standardized tests used in the previous studies, thus giving more continuity and better opportunity for more appropriate comparison of results discovered.

The students were selected at random for the regular classes and the class taught by television. During the first week of the second semester, the Cooperative School and College Ability Test, (form 2A) was administered to determine if the two groups were comparable according to scholastic ability. The Chi-Square Test was used to establish that the two groups were random samplings of a common population. Two additional tests, the High School Civics Test, (form B) from the United States Armed Forces Institute and the Social Studies section (form A) of the Sequential Tests of Educational Progress, were administered to further establish comparability of the two groups. Statistical treatment of the additional pretests also indicated that the two groups were random samplings of a common population and therefore the two groups could be treated as normal distributions.

The two regular classes were taught by the same teachers conducting the television classes, namely, the one who gave the lecture by television and the other, the follow-up teacher in the large room where television was received. Individual teacher-made tests were used for the five units and the same unit test was administered both to the television

and the regular classes when each particular unit was completed.

The Social Studies section (form A) of the Sequential Tests of Educational Progress was used as a post-test to measure the overall academic social studies achievement for the groups in the study. The High School Civics Test, (form B) of the United States Armed Forces Institute was used as a post-test to measure specific achievement in American Government. The High School Civics Test, (form B) is a restricted test, but was made available to the Research Department of the Wichita Public Schools for research purposes only.

Statistical Treatment

The statistical method used to determine the significance of the difference between the means was the "t" test. When using the "t" test, assumption is made that the distributions involved are random samplings of a common population. One precise method¹ of comparing an obtained distribution with a normal distribution fitted to the same data is Pearson's Chi-Square Test "for goodness of fit." Normality of the distributions was shown by using Pearson's Chi-Square Test with P being between .05 and .95 which are the usual accepted limits.² It was then possible to compare the results of the "t" test to table values in order to determine

¹Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1937), p. 119.

²Quinn McNemar, Psychological Statistics (New York: John Wiley and Sons, Inc., 1955), p. 238.

the probability of obtaining homogeneous means at different levels of significance. F tests were applied to the results of the pretests to determine homogeneity of variance. Since homogeneity of variance was established, "t" tests were also applied to each of the five unit tests given during the semester and also to the post-test.

Organization of the Study

The organization of this study followed the general plan outlined in this chapter. Chapter II is devoted to a review of related studies and other pertinent literature. Chapter III is devoted to the procedure of the study and Chapter IV is devoted to the presentation and analysis of data. Chapter V consists of a summary, conclusions, and recommendations.

CHAPTER II

REVIEW OF SELECTED STUDIES

A review of studies directly related to this problem disclosed relatively few relating to the effectiveness of television teaching. Nine studies, however, were selected for detailed review because they were most directly related to this investigation.

Bryan¹ reported on a study concerning the teaching of high school chemistry and physics in the Oklahoma City School System. The subjects were 128 high school students in 19 schools for the subject of chemistry and 97 high school students in 17 schools for the subject of physics. The purpose was to determine the level of students' achievement in high school chemistry and physics through instruction by television plus correspondence courses, television plus assistance by college students preparing to teach, and television plus both correspondence and assistance by college students preparing to teach.

The author drew the conclusion that the variable of the (assistance) visitations plus the correspondence course variable provided in conjunction

¹Edward F. Bryan, "A Comparative Study in the Teaching of High School Chemistry and Physics," Audio Visual Communications Review, Vol. X, No. 1, (January and February, 1962), p. A-74.

with the presentation of the telecasts appeared to produce significantly better achievement by the student than did either method presented alone in conjunction with the telecasts.

Another study was made by Bundy¹ on television and the learning of Spanish verbs. The purpose of the study was to determine the effectiveness of instructional television presentational techniques as compared to conventional classroom procedures in promoting initial comprehension of critical basic Spanish verb form concepts. So far as could be determined, neither television's effectiveness in the foreign language area nor the effectiveness of the specific techniques employed to project such content had previously been established. The study was conducted in the spring of 1958 at the University of Detroit with the students in two conventional Spanish I sections regularly taught by other instructors serving as experimental subjects. The statistical analysis revealed no significant differences between the two groups in age, sex distribution, language aptitude, or performance on the final examination for the course and therefore found them suitably comparable. Of the 24 statistical comparisons made, a consistent trend favored television presentational techniques over conventional classroom techniques. Thirteen of the 23

¹E. Wayne Bundy, "Television and the Learning of Spanish Verbs," The Impact of Educational Television (Urbana: University of Illinois Press, 1960), pp. 125 and 132.

comparisons favoring television techniques approach significance and three are statistically significant beyond the .05 level.

From these findings it is apparent that in promoting initial comprehension of critical basic Spanish verb form concepts, television presentational techniques utilizing the unique ability of the medium to provide through superimposition, simultaneous dual and/or sequentially multiple visual stimuli were as effective as, and perhaps more so than, conventional classroom procedures. It was suggested that further study should be undertaken to explore possible interrelationships of particular techniques and specific kinds of content material.

The investigation made by Champa¹ was planned to explore the potential of television in helping ninth grade pupils learn more science with a view to making a career in the field. Three comparable groups of ninth grade science pupils from two junior high schools of Lancaster, Pennsylvania, were used in the experiment. The conventional group was taught as nearly like the teacher had taught ninth grade science the year before, using neither television nor motion pictures. The television group was taught the same course of study, but 30 minutes of the regularly scheduled class time was used to receive two quarter-hour television programs each week. The motion picture group was taught the same as

¹V. Anthony Champa, "Television: Its Effectiveness in Ninth Grade Science Teaching," Audio-Visual Communications Review, Vol. VI, No. 3, (Summer, 1958), pp. 200-202.

the regular group but had 30 minutes of regular class time to view two films each week with the television group.

While the boys did better work in the television group and the girls did better work in the motion picture group, none of the differences were highly significant. When differences in gains between pre- and post-test scores were tested for significance, a definite pattern appeared for both the boys and girls; the rank order from high to low was motion picture group, television group, and control group. In all cases the differences were significant at the .01 level of confidence. The author concluded, however, that television seemed to offer considerable promise in encouraging young people to prepare for a science career.

A comparative study of an introductory geography course on educational television and in the classroom was made by Johnson.¹ The study was designed to discover the teaching effectiveness and the learning retentiveness by teaching an introductory course in geography in the live classroom and over educational television. This was a study of teaching by a very able and stimulating teacher in two quite different situations. This course was offered over KTCA, Twin City Area Educational Television, for credit from September 16, 1958, to January 15, 1959, with 44 day students and 22 off-campus students from Macalester College, Saint

¹Hildegard Binder Johnson, "Teaching Human Geography Over Television," Science Education, Vol. XLVI, No. 1, (February, 1962), pp. 27, 35, and 37.

Paul, Minnesota, participating. It was necessary to compare the results obtained from the class which took Human Geography on television with Sections A and B of Geography 231R which were day classes and adjust for inequalities between classes. The test, consisting of multiple choice items, was administered to all three classes as a pretest then as a final test and as a retention test after a three month interval. Reliability of tests was about .75 estimated by the split half technique using maximum likelihood estimates of the correlation coefficients and then adjusting for the number of items.

The final analysis yielded the following conclusions:

1. The students in all three classes, the television class and two sections of the day class, did significantly better at the end of the course than at the beginning.
2. Students in the television class and in Section B of the day class answered almost the same number of questions after a three month interval that they had answered previously in the final examination.
3. Whether taught by television or in the classroom, achievement according to ability levels followed the usual pattern of students with higher ability learning more than those with lower ability.
4. Students in both sections of the day class achieved a higher mean score than the students in the television class.

Direct comparison between day classes and the television class was obtained by the utilization of two techniques: two way analysis of variance and analysis of covariance with adjusted variables.

A study conducted by Hubbard¹ was designed to investigate three methods of teaching senior high school physics in an attempt to determine the extent to which each method affected the academic achievement of the students. One teaching method was taught by television only; one teaching method was taught by television supplemented by a physics teacher; and the other teaching method was taught by the same physics teacher utilizing classroom techniques and procedures. The subjects were 63 students regularly enrolled in physics during the fall semester of 1957-58 at Harding High School, Oklahoma City, Oklahoma. The subjects were randomly assigned to the three teaching methods on the basis of scholastic ability level. This resulted in 21 subjects for each teaching method group. At the conclusion of the study, the achievement of physics facts and principles as measured by the difference in the pre-test raw scores and the post-test raw scores in the mechanics unit of high school physics was not significantly different. In the analysis of variance which was performed, the calculated F value between teaching methods, between scholastic ability levels, and for the interaction of the teaching methods and scholastic ability levels, were not statistically significant at the .05 level of confidence.

¹George Wendell Hubbard, "The Effect of Three Teaching Methods on Achievement in a Senior High School," (unpublished Ed. D. dissertation, University of Oklahoma, 1958), pp. 39-40.

A study conducted by Jacobs and Bollenbacker¹ attempted to answer the following questions: (1) Can television be used as a technique of in-service growth? (2) Is there a differential in the effectiveness of television instruction upon varying levels of pupil ability? (3) How does instruction in mathematics by television compare with mathematics instruction given in conventional classrooms after a full year of instruction?

This study was conducted in the Cincinnati Public Schools and was concerned with the teaching of seventh grade mathematics by television. All telecasts were live and consisted of lessons of 20 minutes, three times a week with a 30-minute follow-up period. Nine schools were selected to participate out of the 15 junior high schools. They were grouped according to three ability groupings: (1) above average, (2) average, and (3) below average.

The authors concluded that significant interaction effects were noted between levels of pupil ability and methods of instruction. Also that at the high ability level, performance was significantly in favor of the conventional classroom method of instruction, while at the average ability level, performance was significantly in favor of the television method of instruction. At the below average ability level, no significant difference between methods of instruction was found.

¹James N. Jacobs and Joan Bollenbacker, "Teaching Seventh Grade Mathematics by Television," The Mathematics Teacher, Vol. LIII, No. 7, (November, 1960), pp. 543, 546, and 547.

Another experiment conducted by Kanner¹ concerning television in Army training produced results consistent with other studies. It was the purpose of this study to compare the effect upon learning produced by 38 hours of continuous television training over a five day period with that produced by a similar period of regular classroom instruction. A secondary objective was to evaluate the teaching effectiveness of minimal television presentations. Minimal television production techniques referred to use of television with a minimum of preparation or effort to adapt teaching material to television. It involved the procedure of taking an experienced classroom teacher and having him teach over television with little or no rehearsal or preparation. The subjects of the study were 281 trainees assigned to Power Maintenance course at S. E. Signal School, Fort Gordon, Georgia.

The results of this experiment indicated that material taught over television is retained as well as material taught in the regular instruction situation. The fact that there was no significant difference between methods of instruction in the retention scores of trainees reduces the importance of the initial differences in learning.

The authors concluded that television may be employed intensively without the day-to-day losses in teaching effectiveness normally obtained

¹Joseph H. Kanner and Others, "Television in Army Training, " Audio-Visual Communications Review, Vol. VI, No. 4, (Fall, 1958), pp. 270, 272, and 281.

with regular instruction. Also it was concluded that minimal television presentations similar to the kind presented in this study are not as effective as regular classroom instruction in terms of immediate learning and that learnings from minimal television instruction is retained as well as regular instruction.

Nelson¹ reported on a three week project in American History in the Wichita Public Schools, Wichita, Kansas. Past studies of the effectiveness of television instruction in the Wichita Public Schools had included full year or semester courses. The author felt that this made it extremely difficult to adequately define goals or describe the activities presumed to contribute to these goals. For this reason, the investigation was limited on this project to a specific unit of study over a relatively short period of time. In order that the variety and kinds of presentations made possible by television not dictate the objectives of the unit, the social studies department of a disinterested Wichita high school agreed to prepare a final examination over a three chapter unit on "The Development of Political Parties." Since the control and experimental schools knew that the test would cover material in the text, they agreed to spend three weeks on the unit and to administer the examination at the conclusion of that period of time. No specific goals or objectives were defined other than those stated in the text.

¹Gwendolyn Nelson, "Educational Television," Research Bulletin, Vol. II, No. 2, (Spring, 1961), Research Department, Wichita Public Schools, Wichita, Kansas, pp. 1 and 2.

Regular instruction in six classes of from 30 to 35 pupils each was conducted in the control school. Approximately 110 pupils in each of the two groups were taught by television. On the basis of the study, it appeared that the television instruction was at least as effective as regular classroom instruction in promoting the acquisition of factual information in the social studies. It was also inferred that television instruction had a more favorable influence on the achievement of brighter pupils.

The purpose of the study by Toffel¹ was to determine the effectiveness of televised instruction in supplementing the teaching of high school chemistry under varied conditions in Alabama schools. The subjects were 113 white and 67 Negro students in classes with television and 142 white and 12 Negro students in classes without television in 10 white and 5 Negro schools. Comparisons were made of individual achievement in high schools using television to supplement chemistry instruction and in schools not using such television instruction.

The author found that: (1) White students not using television made significant gains over those using television, a predictable result since the white schools' controls had principals and teachers who were especially proud of their science courses. Other white schools sought

¹George M. Toffel, "Effectiveness of Instruction by Television in Teaching High School Chemistry in Alabama Schools," Audio-Visual Communications Review, Vol. X, No. 1, (January and February, 1962), pp. 81 and 82.

as control, upset the experiment by refusing to take part, or by failure to send in test data. (2) Negro students using television achieved significantly higher scores than those not using television. (3) Statistically significant differences were obtained between scores of white students favoring those working with good teachers, those working in good laboratory facilities, those with above average mental ability, and male students. (4) Comparisons between Negro students were statistically significant only in cases of the good versus poor laboratory facilities, above average mental ability versus those below average in this ability. (5) When the quality of laboratory facilities and teacher training was high for both groups, students with mental ability performed better without the use of television, while students with below average mental ability performed better if they had the advantage of television lessons. (6) When both television users and nonusers enjoyed good laboratory facilities but had less qualified teachers, the advantage seemed to rest with the nontelevision-using students. (7) When comparisons were made between Negro television and nontelevision users having poor laboratories but good teachers, the television students seemed to have the advantage.

In a report by Scanlon,¹ it was pointed out that television possesses the unique advantages of vastly extending the reach of the

¹John B. Scanlon, "The Expanding Role of Television in American Education," Journal of Educational Sociology, Vol. XXXII, No. 9, (May, 1959), pp. 413 and 420.

Nation's best teachers and that it can bring to students educational experiences quite beyond the potential of conventional means of instruction. The author went on to say, it was too early to draw any final conclusions about television's ultimate role in education; the results of the experimentation, however, had been encouraging. These results showed, among other things, that students both at the school and college level learned as much and in some cases significantly more from televised instruction than from conventional instruction. The usual findings from most of the experiments showed no significant difference in achievement between students in regular classes and those in television classes. The author felt that this finding in itself was remarkable, in view of the newness of television as a medium of instruction, the relative inexperience of those who have been using it, and the fact that existing school and college classrooms as well as existing television equipment were not designed for television instruction.

Results from two of the most extensive school experiments, although still tentative, indicated that superior teaching over television stimulates much better learning on the part of the student than ordinary teaching in the classroom. This was particularly true when the team approach was employed and when studio teachers and classroom teachers pooled their teaching skills and each had undertaken that particular part of the total teaching job to which he or she was best suited by interest, ability, and temperament.

Television properly concerned and used can help relieve teachers of much of the burden of presentation. Tyler¹ said that this newest technological aid is broad gauged, combining sight, sound, action, immediacy, and convenience. It carries such a semblance of reality that viewers become personally involved, as though they were a part of the action before the cameras. Television can do the following things as an instructional aid:

1. It conveys personality.
2. It brings efficient quality instruction.
3. It focuses attention on the significant aspects of the presentation.
4. It makes superior use of visual materials.
5. It can do things classroom teachers cannot (close-up of objects).
6. It can induce learner participation during the broadcast.
7. It can motivate later action and stimulate longtime interests.

Direct teaching by television is cheaper than enrichment television. It can be done effectively with limited resources, and it can accomplish much that is important in teaching-learning. It should be remembered, however, that direct teaching by television is by no means the whole of teaching. It is simply the presentation part of teaching. It can help in motivating learners; it can expound ideas and concepts, and develop them logically; it can present models to be emulated; it can raise questions and pose problems; and it can provide some drill.

¹I. Keith Tyler, "Television Frees the Teacher," Educational Research Bulletin, Vol. XXXIX, No. 7, (October 12, 1960), pp. 174, 177, 178.

It cannot study individual learners and their interests and needs. It cannot provide individual and group activities; it cannot appraise individual progress; it cannot counsel and advise students with special problems; it cannot provide laboratory experiences; it can do little toward the development of creativity and inventiveness; and it cannot provide much practice in applying principles, gathering data, and handling group problems democratically.

The classroom teacher must concentrate upon the face-to-face relationships with learners as individuals and in groups. He must do far less lecturing and more guiding, appraising, counseling, and motivating. In these things lie the deep satisfactions in teaching. Here teachers attain their real successes and make lasting impressions upon their pupils in setting conditions for individual growth and group interaction. This, the author states, is teaching raised to the high level of a fine art, the art of nurturing constructive growth in children and youth.

Some of the television research and findings to date are reported by Sherman.¹ Despite more than 400 major studies during the past fifteen years, researchers have merely scratched the surface of problems related to televised instruction. A few of the tentative conclusions indicated by present research are:

¹ Mendel Sherman, "MPATI'S Promise, A Summing Up," Phi Delta Kappan, Vol. XLIII, (May, 1962), p. 329.

1. Much information can be learned as effectively from television as from conventional instruction.
2. Students of varying ability learn from television; it is not uniquely appropriate to any specific ability level.
3. Students' and teachers' attitudes toward television vary greatly. We have little evidence that learning is affected by the students' preference for or against television.
4. Class size does not appear to be an important factor in learning by television.
5. No subject matter area or grade level is either especially appropriate or inappropriate for television.
6. Recorded programs are about as effective as live presentations.
7. Students prefer an experienced instructor on television to an inexperienced one in the conventional classroom.

In a report given by Tanner¹ concerning needed research in instructional television, he stated that nearly two hundred thousand students in some 200 public schools received televised instruction during the 1959-60 school year. The majority of the comparisons in this program sponsored by the Fund for the Advancement of Education revealed no significant difference in the academic achievement of the experimental and the control groups.

¹Daniel Tanner, "Needed Research in Instructional Television," The School Review, Vol. 69, (Autumn, 1961), pp. 313-320.

In his research, Tanner¹ felt that we seem to be imposing a serious handicap on both instructional television and direct classroom teaching. He stated that we need to direct our attention to two essential questions:

What type of learning outcomes can be derived through instructional television that cannot be derived through direct classroom instruction? What types of learning outcomes can be derived through direct classroom instruction that cannot be derived through instructional television?

The most accurate instruments in the measurement of achievement seem to be confined to the retention of information and attainment of certain skills. Little is apparently being done to measure gains in critical thinking, in creativity, and in attitudes of inquiry. Research on student attitudes toward television revealed that most students prefer conventional instructional conditions and small classes but there appeared to be little relationship between student attitude toward instructional conditions and performance on achievement tests that measure subject matter information.

Instead of attempting to use television for total teaching, we need to determine the ideal proportion or balance between instructional television and direct classroom teaching in given situations. We also need to determine how television can be used most effectively with both the conventional and newer media of instruction such as teaching machines.

¹Ibid.

Furthermore, we need to ascertain the advantages of using television to supplement and enrich the classroom program. Instead of attempting to demonstrate how instructional television is at least equal to conventional modes of instruction, we should be looking for ways of using this medium to extend and enrich the teaching-learning process by providing experiences that transcend the confines of the conventional classroom.

Television is not a medium for total teaching, nor should it be used as an automation device to reduce the cost of education by enlarging experiences that are not possible under the conventional conditions of classroom instruction.

In concluding the review of literature, it is important to note a most recent development as given in a report by the Editors of USA.¹

Now that President Kennedy has signed into law a bill authorizing \$32 million in federal funds to aid educational television and Congress is on the verge of opening up a vast new spectrum of ultra high frequency channels by requiring manufacturers of television sets to equip them for both VHF and UHF reception, it is obvious that greater opportunities for cultural growth to all Americans will be increased.

Elam² reported that Nestinger, Undersecretary in the Department of Health, Education, and Welfare, assured "utmost speed in the

¹Editors of USA, The Shape of Education for 1962-63, National School Relations Association in cooperation with the Division of Press and Radio Relations, National Education Association, 1962, (Washington 6, D.C., 1201 Sixteenth Street, N.W.), p. 23.

²Stanley Elam, Editor, "Keep Abreast in Education," Phi Delta Kappan, Vol. XLIII, (June, 1962), p. 423.

administration of this program" and that television's "tremendous potential in the field of education has scarcely been touched." These statements were made at the opening session of Ohio State University's annual institute for education on May 2, 1962.

In general these studies indicated there was a further need for study concerning the effectiveness of television teaching and that the results were not definite with regard to teaching by television as compared to teaching in the regular classroom.

CHAPTER III

PROCEDURE OF THE STUDY

Design of the Experiment

This study was designed to determine the effectiveness of television teaching of American Government in Wichita High School South, Wichita, Kansas in comparison with that of classes utilizing conventional instructional practices in the same school. The course in American Government which was selected for study is required of each pupil for graduation. Designed as a one-semester course during the twelfth year, it carried one-half unit of credit. The study was conducted during the second semester of the 1961-62 school year.

Many studies concerning the effectiveness of television teaching formed television and regular classroom groups, then gave a pretest and a post-test and made an analysis on this basis to determine the effectiveness by measuring gains in knowledge. Pretesting was done to equate the groups and it was determined that the two distributions could be treated as normal distributions. Individual unit tests were given to both groups as well as post-tests in attempting to determine the effectiveness of television teaching.

The subjects for this study were enrolled in American Government classes in the summer of 1961 and were selected at random for

their second semester classes. A total of 97 students were enrolled in the American Government course taught by television, while a total of 68 students were enrolled in the American Government course taught in the regular classroom. The Cooperative School and College Ability Test, (form 2A), Social Studies section (form A) of the Sequential Tests of Educational Progress, and the High School Civics Test (form B) from the United States Armed Forces Institute were administered as pretests to determine if the two groups were comparable according to scholastic ability. The Chi-Square Test was used to establish that the two groups were random samplings of a common population and therefore could be treated as normal distributions.

The same text¹ was used in both the regular classes and the television class. Included in the material taught were the five units described below:

Local Government. The primary objective of this unit in local government was to make the student aware of the impact of modern technology upon our society and to realize that eighteenth and nineteenth century concepts of urban organization are not adequate to deal with contemporary problems of metropolitan areas. The student must recognize that the legal municipal area must correspond to the socio-economic area if the complex services demanded are to be efficiently rendered.

¹ Lawrence G. Paquin and Marion D. Irish, The People Govern (New York: Charles Scribner and Sons, 1954).

Included in this unit were brief, but incisive, acquaintainship with municipal law, municipal finance, municipal administration, metropolitan area planning, urban renewal, urban growth and development, and forms of municipal government.

National Government. The objective of this unit was to instill in the student an appreciation of, and pride in, the origin, growth, and development of our national government. A continuing emphasis was placed upon the changes that have been made in our government to meet the demands of a people who have constantly broadened their concept of democracy while simultaneously engaged in developing a more complex civilization. The legislative, executive, and judicial branches of government were studied in some detail, noting in particular their growth from almost mutually exclusive institutions to overlapping, yet frictional, branches. The concept of federalism was also examined in this unit and the change from a nineteenth century legal relationship between the states and the nation to a twentieth century socio-economic relationship was emphasized. The Declaration of Independence and the Constitution were closely examined in this unit.

Taxation. The primary objective was to drive home the fact that there is a positive correlation between government costs and services. Two theories of taxation were considered; the first would assess the tax in the cheapest and fairest way possible without regard to social consequences while the latter would use taxation as a tool for social reform.

The requirements of a sound tax system were outlined to be: adequacy, economy, convenience, elasticity, simplicity, and diversity. Individual taxes were considered on the basis of collection base, economy of collection, convenience of collection, and propensity to be shifted. Individual taxes were also considered on the basis of whether they are progressive or regressive.

Civil Liberties. Concepts of the eighteenth and nineteenth centuries would make man free to the extent that he was unrestrained by social (particularly governmental) institutions. Modern governments are less apt to be agents of restraint than active participants in widening the boundaries of political, social, and economic freedom. Court cases were heavily relied upon to emphasize the change from a restraining government to an actively participating government. This unit was designed and presented to help the student form an attitude of respect for the rights of others and loyalty to democratic ideals. If democracy, which is based upon intelligent participation of the citizenry, is to survive, then respect for the concept of majority rule and for the right of minority dissent must be fostered.

Political Parties. In our society the governed give their agent (the government) their consent to be governed through the political party. The political party is the institution through which we, the people, make choices as to the manner, form, and substance of much governmental process. The American system of government exists, in large part, to

protect the rights of the individual and the instrumentality through which we select our leaders, but it is through the pressure group and the political party that the thoughts and actions of individuals are transformed into the dynamic forces that enable us to accomplish our political objectives. The importance of the basis and structure of our political parties was emphasized, as was party finance. The importance of participation was constantly emphasized, on the grounds that the minority controls our political institutions only when the majority is inert. The role of public opinion and opinion formation was considered.

Television Class

The course taught by television was taught the first hour, from 8:30 to 9:45, to 97 senior students by two certified social science teachers, one of whom was to telecast the lesson while the other had the responsibility for working with the students in the classroom. In the actual presentation of material, both teachers had important roles. The effectiveness of the television lesson was without doubt affected by the activity of the classroom teacher. Therefore, the vital importance of the role of the classroom teacher when television is being used as a teaching tool should not be underestimated.¹

The telecast originated at Wichita High School South and was presented by closed circuit to the above described students only. The

¹Pittsburgh Schools, Use of Radio and Television in the Pittsburgh Public Schools, Vol. XXXIV, (January-April, 1960), p. 149.

arrangement and procedure for utilization of the television presentation at Wichita High School South is described below: A classroom was converted to a closed circuit studio with the students viewing the lesson in the cafeteria. A full-time teacher acting as a television producer coordinated the lessons for American Government as well as three American History classes which were televised. A full-time artist was also employed who made drawings, sketches, models, etc., for the teachers to use in telecasting. Student camera operators were used and were considered very competent. Two full-time teacher aids were used in the follow-up room; their duties consisted of taking attendance, grading objective tests, typing or mimeographing materials, and taking care of routine matters.

After taking care of routine matters which are usually present at the first of the class, the classroom teacher prepared the class for the lesson. He reminded the class of points mentioned the preceding day, as well as raising provocative questions in the minds of the students concerning the current material. He dictated the main objectives in the day's lesson and gave points in a skeleton outline for filling in during the lesson. Thus the classroom teacher planned his preparation period so that in the given time (usually ten minutes) he had prepared the way for good attention.

After the preparation each time, the telecast teacher presented the lesson by lecture method, interviews, or panel discussions for a

period of 20 to 30 minutes, four days a week. One day each week was used for testing and supervised study. In the remaining time left during each period, the classroom teacher clarified controversial points, answered questions concerning the lesson, and briefly introduced the next day's lesson.

Regular Classes

The two regular American Government classes were taught second and third hours, 9:50 to 10:45 and 10:50 to 11:45, by the follow-up teacher and the telecast teacher, respectively. Attempts were made in the period of time that instruction was provided to utilize films, filmstrips, panel discussions, and lectures in the manner and to the degree each teacher was accustomed to teach. Teacher-made tests were developed for each unit to discover the degree to which learning was achieved and these tests were used in both the regular classroom and the class taught by television. There was much more interaction in the regular classroom groups since the classes were smaller and time permitted this type of activity. Exchange of ideas, clarification of points of interest to the students, and individual questions entertained were all present to a greater degree in the regular classroom. Both teachers encouraged this type of informal activity and pupil participation.

Evaluation

Both groups of students were tested at the beginning of the second semester by the use of the Cooperative School and College Ability Test,

(form 2A) to determine the homogeneity of the two groups of students.

The same week the students were pretested to determine their knowledge of American Government by using the High School Civics Test, (form B) from the United States Armed Forces Institute. Special permission was granted to the Wichita Public Schools to use this test for research purposes. Further pretesting was also done to ascertain the knowledge of the students by using the Social Studies section (form A) of the Sequential Tests of Educational Progress. This section tested for broader social studies aspects and not specific knowledge of governmental facts.

In keeping with the hypothesis of the study, testing was done on the five units taught in American Government. These five units were: National Government, Local Government, Political Parties, Taxation, and Civil Liberties. These tests were administered both to the students being taught by television and to the students being taught in the regular classroom.

Upon completion of the fifth unit, post-tests were administered to determine the effectiveness of the television-taught class with the regular-taught classes. The Social Studies section (form A) of the Sequential Tests of Educational Progress was administered as a post-test for evaluating broad social studies learnings. The High School Civics Test, (form B) from the United States Armed Forces Institute was administered as a post-test for specific knowledge of American Government. All testing in the television class was administered by the Senior Counselor

who followed the formal "Directions for Administration." In the regular classes, all testing was done by the regular class teacher who followed the formal "Directions for Administration."

In order to determine if there were significant differences between the two groups being tested, "t" tests were computed as shown in Appendix A. Before using the "t" test on the continuous data, it was necessary to determine the normality of the distributions of the regular classroom group and the group taught by television. Pearson's Chi-Square Test "for goodness of fit" was computed to see if the distributions could be treated as normal. F tests were also computed to determine if the variances of the two groups were homogeneous. The results of Pearson's Chi-Square Test, the F test, and "t" tests are presented in Chapter IV.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This study was concerned with the achievement of knowledge of American Government for senior high school students as measured by the mean difference between raw scores of the two post-tests when the students were taught by the conventional classroom method and by television. In addition, an attempt was made to determine if there was any significant difference in student achievement in several of the five units taught by television as compared to regular classroom instruction.

The primary statistical treatment used to determine the significance of the difference between the means was the "t" test. It is possible to compare the results of the "t" test to table values to determine the probability of obtaining homogeneous means at different levels of significance if the hypothesis is used that the two groups tested are random samplings of a common population.¹ To check on whether it was reasonable to believe that the two frequency distributions were within limits of chance sampling of the normal or some other specified type,

¹ E. F. Lindquist, Statistical Analysis in Educational Research (New York: Houghton Mifflin Company, 1940), p. 56.

Pearson's Chi-Square Test¹ "for goodness of fit" was computed.

Chi-Square Test for the Distribution of SCAT
Scores of the Regular Classroom Group

Table I presents the data for significance in frequency distribution of Cooperative School and College Ability Test, (form 2A) scores of the regular classroom group.

The obtained Chi-Square was 9.698 and the required value for significance at the .05 level was 19.675 at 11 df in Table 52 in Garrett.² This value indicated that it was not significant and it was therefore assumed that the distribution could be treated as a normal distribution.

Chi-Square Test for the Distribution of SCAT
Scores of the Group Taught by Television

Table II presents the data for significance in frequency distribution of the Cooperative School and College Ability Test scores of the group taught by television.

The obtained Chi-Square was 8.872 of the required value for significance at the .05 level was 19.675 at 11 df in Table 52 in Garrett.³ This value indicated that it was not significant and it therefore was assumed that our distribution could be treated as a normal distribution.

¹Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1937), p. 123.

²Ibid.

³Ibid.

TABLE I

A CHI-SQUARE TO TEST IF THERE IS A SIGNIFICANT DIFFERENCE IN THE FREQUENCY DISTRIBUTION OF STANDARD DEVIATIONS FROM THE MEAN AND THE EXPECTED FREQUENCY OF SCAT SCORES OF STUDENTS TAUGHT BY THE REGULAR CLASSROOM METHOD

σ	f_o	f_e	$f_o - f_e$	$(f_o - f_e)^2$	$\frac{(f_o - f_e)^2}{f_e}$
3.0	0	0.003	-0.003	0.000	0.000
2.5	3	1.129	1.871	3.501	3.101
2.0	3	2.992	0.008	0.000	0.000
1.5	4	6.249	-2.249	5.058	0.809
1.0	11	10.186	0.814	0.662	0.064
0.5	10	13.022	-3.022	9.132	0.701
-0.5	19	13.022	5.978	35.736	2.744
-1.0	10	10.186	-0.186	0.346	0.003
-1.5	4	6.249	-2.249	5.058	0.809
-2.0	4	2.992	1.008	1.016	0.339
-2.5	0	1.129	-1.129	1.274	1.128
-3.0	0	0.003	-0.003	0.000	0.000
Total	68	67.162			$\chi^2 = 9.698$ (df = 11)

TABLE II

A CHI-SQUARE TO TEST IF THERE IS A SIGNIFICANT DIFFERENCE IN THE FREQUENCY DISTRIBUTION OF STANDARD DEVIATIONS FROM THE MEAN AND THE EXPECTED FREQUENCY OF SCAT SCORES OF STUDENTS TAUGHT BY TELEVISION

σ	f_o	f_e	$f_o - f_e$	$(f_o - f_e)^2$	$\frac{(f_o - f_e)^2}{f_e}$
3.0	0	0.004	-0.004	0.000	0.000
2.5	3	1.610	1.390	1.932	1.200
2.0	3	4.268	-1.268	1.607	0.376
1.5	9	8.914	0.086	0.007	0.001
1.0	11	14.531	-3.531	12.468	0.858
0.5	23	18.575	4.425	19.581	1.054
-0.5	23	18.575	4.425	19.581	1.054
-1.0	9	14.531	-5.531	30.592	2.105
-1.5	11	8.914	2.086	4.351	0.488
-2.0	5	4.268	0.732	0.536	0.126
-2.5	0	1.610	-1.610	2.592	1.610
-3.0	0	0.004	-0.004	0.000	0.000
Total	97	95.804			$\chi^2 = 8.872$ (df = 11)

Guilford¹ points out that for small samples the "t" test of difference between standard deviations is not satisfactory, even with the "students' distribution for t." Instead of testing the significance of a difference between two standard deviations, we can test the significance of the ratio of the two variances that correspond to them. If the ratio of the variances is significant, the difference between the standard deviations is significant. This ratio has been given the symbol F.

F tests were computed for each group for which "t" test values were reported. None of the pairs of groups differed significantly in regard to variance according to the F tests. Only the variance computed for the unit on Taxation approached significance. The variance was 1.44 compared to the table value in Guilford² which was 1.45 at df of 70/100 at the .05 level of confidence. With the values this close, significance was doubtful.

Pretest: Cooperative School and College Ability Test

Table III presents the data for significance of difference of means applied to raw scores of the Cooperative School and College Ability Test (form 2A) for the television and regular classroom groups.

¹J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1952), p. 232.

²Ibid., p. 613.

TABLE III

RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE COOPERATIVE SCHOOL AND COLLEGE ABILITY TEST (FORM 2A) FOR THE TELEVISION AND REGULAR CLASS GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	59.433	316.61	17.79
Regular Class	68	58.941	327.40	18.09
F = 1.034 (Not significant)		t = 0.172 (Not significant)		

From Table D in Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence. From Table I, the critical ratio was 0.172, indicating that the difference of means on the Cooperative School and College Ability Test was not significant and it therefore was assumed that the two groups were closely matched in overall academic achievement before taking the American Government course.

Pretest: Sequential Tests of Educational Progress

The data for significance of difference of means for the Social Studies section (form B) of the Sequential Tests of Educational Progress of the regular class group compared to the television group is presented in Table IV.

From Guilford,² the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level

¹Ibid., p. 610.

²Ibid.

of confidence. From Table IV, the critical ratio was 0.224, indicating that the difference of the means on the Social Studies section (form B) of the Sequential Tests of Educational Progress was not significant and it therefore was assumed that the two groups were closely matched in the knowledge of social studies.

TABLE IV

RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE SOCIAL STUDIES SECTION (FORM B) OF THE SEQUENTIAL TESTS OF EDUCATIONAL PROGRESS USED AS A PRETEST FOR THE TELEVISION AND THE REGULAR CLASS GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	39.907	110.67	10.52
Regular Class	68	40.279	101.381	10.52

$F = 1.091$ (Not significant)

$t = 0.224$ (Not significant)

Pretest: High School Civics Test

Table V presents the data for significance of means for the High School Civics Test, (form B) from the United States Armed Forces Institute of the regular class groups compared to the television group.

TABLE V

RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE HIGH SCHOOL CIVICS TEST (FORM B) OF THE UNITED STATES ARMED FORCES INSTITUTE USED AS A PRETEST FOR THE TELEVISION AND REGULAR CLASS GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	61.082	265.41	16.29
Regular Class	68	60.515	209.626	14.47

$F = 1.266$ (Not significant)

$t = 0.231$ (Not significant)

From Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table V, the critical ratio was 0.231, indicating that the difference of the means on the High School Civics Test, (form B) of the United States Armed Forces Institute was not significant and it therefore was assumed that the two groups were closely matched in the knowledge of facts and principles of American Government.

Unit Test: National Government

The test for significance of means between the television group and the regular classroom group applied to the unit test on National Government is presented in Table VI.

TABLE VI
RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE UNIT TEST
ON NATIONAL GOVERNMENT FOR THE TELEVISION AND REGULAR
CLASSROOM GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	55.639	151.075	12.291
Regular Class	68	61.618	160.604	12.673

$F = 1.063$ (Not significant) $t = 3.004$ (Significant)

From Guilford,² the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table VI, the critical ratio was 3.004, so it was

¹Ibid.

²Ibid.

therefore assumed that the difference of the means on the unit test of National Government was significant at the .05 level of confidence and that the regular classroom group did possess greater knowledge of the material on the National Government unit.

Unit Test: Local Government

The test for significance of means between the television group and the regular classroom group applied to the raw scores of the test on the unit of Local Government is presented in Table VII.

TABLE VII
RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE UNIT TEST
ON LOCAL GOVERNMENT FOR THE TELEVISION AND REGULAR
CLASSROOM GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	51.814	109.762	10.477
Regular Class	68	57.544	96.967	9.847

$F = 1.132$ (Not significant) $t = 3.050$ (Significant)

From Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table VII, the critical ratio was 3.050, so it was therefore assumed that the difference of the means on the unit test on Local Government was significant at the .05 level of confidence and that the regular classroom group did possess a greater knowledge of the material on the Local Government unit.

¹Ibid.

Unit Test: Political Parties

Table VIII presents the data for significance of differences of means applied to raw scores of the test on the unit of Political Parties between the television group and the regular classroom group.

TABLE VIII

RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE UNIT TEST
ON POLITICAL PARTIES FOR THE TELEVISION AND THE REGULAR
CLASSROOM GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	33.412	59.504	7.714
Regular Class	68	33.397	57.066	7.554

$F = 1.043$ (Not significant) $t = 0.0017$ (Not significant)

From Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table VIII, the critical ratio was 0.0017, indicating that the difference of means on the unit test concerning Political Parties was not significant at the .05 level of confidence and that there was little difference in the knowledge achieved on this unit between the two groups.

Unit Test: Taxation

Table IX presents the data for significance of difference of means applied to raw scores of the test on the unit of Taxation between the television group and the regular classroom group.

¹ Ibid.

TABLE IX
RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE UNIT TEST
ON TAXATION BETWEEN THE TELEVISION AND THE REGULAR
CLASSROOM GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	33.732	60.255	7.762
Regular Class	68	31.074	86.716	9.312

$F = 1.441$ (Not significant) $t = 1.960$ (Not significant)

From Guilford,¹ the critical ratio at 163 degrees on freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table IX, the critical ratio was 1.960, indicating that the difference of means on the unit test concerning Taxation was not significant. The two ratios were relatively close so no high degree of significance or nonsignificance was attached to these results. However, the television group approached significance, and it was assumed that this group may have achieved slightly greater knowledge on the Taxation unit.

Unit Test: Civil Liberties

Table X presents the test for significance of difference of means applied to raw scores of the test on the unit of Civil Liberties between the television group and the regular classroom group.

¹ Ibid.

TABLE X

**RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE UNIT TEST
ON CIVIL LIBERTIES FOR THE TELEVISION AND THE REGULAR
CLASSROOM GROUPS**

	N	MEAN	VARIANCE	σ
Television Class	97	22.732	86.825	9.328
Regular Class	68	26.882	70.417	8.389

F = 1.233 (Not significant) t = 0.017 (Not significant)

From Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table X, the critical ratio was 0.917, indicating that the difference of the means on the unit test concerning Civil Liberties was not significant at the .05 level of confidence and that there was little difference in achievement of knowledge on this unit between the two groups.

Post-Test: Sequential Tests of Educational Progress

Table XI presents the data for significance of the difference of means applied to raw scores of the post-test on Social Studies section (form A) of the Sequential Tests of Educational Progress of the regular class group compared to the television group.

TABLE XI

**RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE SOCIAL
STUDIES SECTION (FORM A) OF THE SEQUENTIAL TESTS OF
EDUCATIONAL PROGRESS USED AS A POST-TEST FOR THE
TELEVISION AND REGULAR CLASSROOM GROUPS**

	N	MEAN	VARIANCE	σ
Television Class	97	40.763	95.615	9.978
Regular Class	68	39.485	82.303	9.072

F = 1.162 (Not significant) t = 0.841 (Not significant)

¹Ibid.

From Guilford,¹ the critical ratio at 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level of confidence. From Table XI, the critical ratio was 0.841, indicating that the difference of the means on the Social Studies section (form A) of the Sequential Tests of Educational Progress was not significant, and therefore it was assumed that there was little difference in the achievement of general knowledge in the broad area of social studies.

Post-Test: High School Civics Test

Table XII presents the data for significance of difference of means applied to raw scores of the post-test, High School Civics Test, (form B) of the United States Armed Forces Institute of the regular classroom groups compared to the television group.

TABLE XII

RESULTS OF TESTS OF SIGNIFICANCE APPLIED TO THE HIGH SCHOOL CIVICS TEST (FORM B) OF THE UNITED STATES ARMED FORCES INSTITUTE USED AS A POST-TEST FOR THE TELEVISION AND THE REGULAR CLASSROOM GROUPS

	N	MEAN	VARIANCE	σ
Television Class	97	71.258	265.040	16.280
Regular Class	68	71.971	214.205	14.636

F = 1.237 (Not significant) t = 0.286 (Not significant)

From Guilford,² the critical ratio of 163 degrees of freedom was found to be 1.975 at the .05 level of confidence and 2.608 at the .01 level

¹Ibid.

²Ibid.

of confidence. From Table XII, the critical ratio was 0.286, indicating that the difference of the means on the High School Civics Test, (form B) of the United States Armed Forces Institute was not significant at the .05 level of confidence and it therefore was assumed that at the conclusion of the study there was little difference in achievement of academic knowledge in the specific field of American Government between the two groups.

Analysis of Classroom Conditions

Closed circuit television had been offered at Wichita High School South in certain subject areas for the past two years prior to this group involved in the study taking the American Government course offered in television. A majority of the students taking the course by television had the course in American History presented on television the previous year. Consequently this medium of teaching was not new, many of the students knew what to expect, and some students did not wish to remain in the course being taught by television. None in the regular class requested a transfer into the course being taught by television and there was a certain amount of boredom noticed among the students taking the course by television. A few of the students refrained from listening properly or taking notes from the telecast and some students became minor behavior problems. Many of the students expressed no preference for television or regular classes. Both instructors were well liked and accepted by the students in both teaching situations. It is possible that

the regular classroom teaching may have been more effective for the Local Government and the National Government units because more interaction took place between the instructor and the students and a less formal atmosphere was present. However, these factors apparently were not significant in the achievement of the students in the remaining units that were taught.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was designed to determine the effectiveness of television teaching of American Government in Wichita High School South in comparison with that of classes utilizing conventional instructional practices in the same school. The design of the study required the testing of a general null hypothesis: that there is no significant difference in the gain of knowledge in American Government by high school seniors who are taught American Government by the conventional classroom teaching method and those taught by television, at the .05 level of confidence. In addition to the general null hypothesis, five specific null hypotheses were also advanced that there is no significant difference in the gains of specific units of American Government by high school seniors who are taught by the conventional classroom method and those taught by television.

The subjects were 165 senior high school students regularly enrolled in American Government during the spring semester of the 1961-62 school year at Wichita High School South, Wichita, Kansas. The subjects were randomly assigned to the class taught by television and

the two classes taught by the conventional classroom method. This resulted in 97 subjects in the class taught by television and 68 in the two classes taught by the conventional classroom method.

Prior to the instructional period, all subjects were given the Cooperative School and College Ability Test (form 2A) as a test to equate the two groups of students in the study and determine if the two groups had homogeneity of variance. The Social Studies section, (form B) of the Sequential Tests of Educational Progress was given to all students in the three classes. The High School Civics Test (form B) of the United States Armed Forces Institute was given to all students in the study as a pretest to determine their knowledge of American Government. During the semester, both groups were given unit tests upon the completion of the following units: (1) National Government, (2) Local Government, (3) Political Parties, (4) Taxation, (5) Civil Liberties. At the close of the fifth unit, the Social Studies section (form A) of the Sequential Tests of Educational Progress and the High School Civics Test, (form B) of the United States Armed Forces Institute were given as post-tests.

Pearson's Chi-Square Test "for goodness of fit" was computed for both the regular classroom group and the group taught by television using the SCAT scores as a basis for equating the two groups. This check determined whether the distributions were within the accepted limits of normality at the .05 level of confidence. The results showed that both groups were within the limits of "normality."

In computing F tests to determine if the two groups had homogeneity of variance, it was found that for every "t" test computed there was homogeneity. By use of the Cooperative School and College Ability Test (form 2A), the groups were found to be homogeneous by computing the "t" test. This also proved true on the two pretests given. By use of the individual unit tests, it was found that on the first two units, National Government and Local Government, there was a significant difference at the .05 level of confidence in the academic achievement of the regular classroom group compared to the group taught by television. In the other three units, Political Parties, Taxation, and Civil Liberties, the "t" tests showed no significant difference in the academic achievement of the two groups at the .01 or .05 level of confidence. In the "t" tests computed between the means on the post-tests of the two groups, no significant differences were noted at either the .01 or .05 level of confidence.

Conclusions

From the results of this investigation, the following conclusions were made:

1. In the experiment, television teaching did not prove to be superior when the overall achievement was compared with that of the regular classes taught by conventional instructional procedures.

2. Television teaching did not prove to be superior in the experiment when academic achievement was compared with that of the regular

classes taught by conventional instructional procedures on any of the five individual units taught in American Government.

3. Under the conditions provided for the experiment, the conventional classroom method proved to be superior in the teaching of the two units on National Government and Local Government.

4. The results of this study are in agreement with the review of related literature. In two of the studies reported, television teaching was superior, but for the most part, television teaching was not superior. On the other hand, television teaching was probably equal to regular classroom teaching in effectiveness.

Recommendations

From the results of the investigation, the following recommendations are presented:

1. Additional study should be made to discover the effect of the two methods used in this study upon learning outcomes other than achievement of facts and principles in American Government for high school seniors.

2. Determine whether other teaching approaches such as team teaching and programmed instruction would be more effective in teaching American Government to high school senior students than television and conventional classroom teaching.

3. Apply techniques similar to those used in this study to the teaching of other selected courses in the secondary curriculum.

4. Experimental studies should be conducted to determine the relative effectiveness of television and regular class room instruction on students of high, average, and low scholastic aptitude.

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APPENDICES

APPENDIX A

ADDITIONAL STATISTICAL DATA

MEAN SCORES OF THE TESTS GIVEN TO THE CLASS TAUGHT BY TELEVISION

	SCAT	Pre STEP	Pre USAFI	#1	#2	#3	#4	#5	Post STEP	Post USAFI
X	5765	3871	5925	5397	5026	3241	3272	2208	3954	6912
X ²	373343	165215	387653	314937	217062	114059	116216	58683	170452	518246
$\bar{X}$	59.433	39.907	61.082	55.639	51.814	33.412	33.732	22.732	40.763	71.258

MEAN SCORES OF THE TESTS GIVEN TO THE CLASSES TAUGHT BY REGULAR CLASSROOM INSTRUCTION

	SCAT	Pre STEP	Pre USAFI	#1	#2	#3	#4	#5	Post STEP	Post USAFI
X	4008	2739	4115	4190	3913	2271	2113	1828	2685	4894
X ²	258498	117217	263275	269102	231763	79725	71557	53928	111613	366794
$\bar{X}$	58.941	40.279	60.515	61.618	57.544	33.397	31.074	26.882	39.485	71.971

APPENDIX B

Pearson's Chi-Square Test "for goodness of fit" is the method used in comparing an obtained distribution with the normal distribution fitted to the same data. The formula is given below:

$$\chi^2 = \sum \left(\frac{(f_o - f_e)^2}{f_e} \right)$$

Fisher's "t" formula for testing the difference between the means is given below:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sum (X_1 - \bar{X}_1)^2 + \sum (X_2 - \bar{X}_2)^2}{N_1 + N_2 - 2} (1/N_1 + 1/N_2)}}$$

where:

$\bar{X}_1$ and $\bar{X}_2$ are the means in the two samples.

$\sum (X_1 - \bar{X}_1)^2$ and $\sum (X_2 - \bar{X}_2)^2$ are the sums of the squares in the two samples.

N_1 and N_2 are the number of observations, respectively.

F ratio for testing a difference between two estimates of a population is given below:

$$F = \frac{\text{larger variance}}{\text{smaller variance}}$$