THE PLANNING, PRODUCTION, AND EVALUATION OF TWO
EXPERIMENTAL SERIES OF CLASSROOM TELECASTS FOR
USE IN THE INTERMEDIATE GRADES
IN THE COLUMBUS, OHIO, AREA

DISSERTATION

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the
Graduate School of the Ohio State
University

By

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*****

The Ohio State University

1955

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The writer wishes to express his appreciation to Dr. H. B. Summers, and Dr. I. Keith Tyler for guidance and criticism received in the planning and writing of this dissertation. The advice and counsel given by Dr. Arthur Foshay, director of the Bureau of Educational Research at Ohio State University is gratefully acknowledged, as is the financial support of the entire venture by that organization. Grateful appreciation is expressed to Professors Manuel Barkan and Jerome Hausman of the School of Fine and Applied Arts, for their aid in the art series, and to Professor Guy Cahoon of the Department of Education, and Mr. Lewis Evans of the University School for their advice and help with the science series. The writer would also like to thank the many teachers, supervisors, directors and administrators in the Columbus public and parochial schools, without whose cooperation and counsel this research would not have been possible.

The dissertation is dedicated to Nancy Schlaak, the writer's wife, whose encouragement and sacrifice contributed substantially to the completion of this work.
"All Hail, Television! The Eyes and Ears of Tomorrow!"
This pertinent declaration concerning the latest addition to the mass communications media was made by a television star named Oliver J. Dragon, one of the lovable characters of the "Kukla, Fran, and Ollie" television program, created by Burr Tilstrom. The occasion for the remark was the final meeting of the annual Institute for Education by Radio and Television, held in Columbus, Ohio, in April of 1952, at which Ollie was the banquet speaker. His assertion was made just a few days after the Federal Communications Commission lifted the "freeze" on TV station assignments, and in the process, made channel reservations for educational use in 242 American communities.

Today, over three years later, television is a bright reality for millions of people across the nation. Indeed, to paraphrase Mr. Dragon, television has become "The Eyes and Ears of Today." The past decade has seen tremendous growth in the television industry, both here and abroad. By the end of the war with Japan in the summer of 1945, only six television stations were in regular operation in America; today, in September of 1955 there are 434. Four hundred and nineteen of these are commercial stations. Fifteen American
cities have educational television stations on the air, supplementing the commercial television fare with programs of an educational nature. Educators have applied for construction permits for an additional sixty educational stations. Future growth and expansion of television seems inevitable, with a new era of color transmission sweeping into existence.

**Importance of the Study.**

Television holds a tremendous potential for educators; it has been hailed by many as the greatest educational device since the invention of the printing press. Broadcasters have found it to be an effective means of influencing viewers to buy new and old products; it has proved to be an instrument for providing entertainment within the home. TV, both educators, and commercial broadcasters agree, can be used to influence people along lines related to education. In 1952, the FCC recognized the educational potential and value of television by setting aside the 242 channel reservations for the exclusive use of educators for the production of educational television programming.

Television stations in this country have cooperated to a considerable extent with educators and members of informational and cultural organizations in their communities in the production and transmission of informational and general educational programs. In addition, specific educational
subjects have been telecast over commercial and educational stations to adults in the form of telecourses. To date, most of these telecourses have been presented over commercial television stations by educators working in cooperation with the broadcasters. These experiments have shown good results in terms of numbers of people taking the subjects given, in terms of interest raised in educational television, and in the ability of the medium to transmit educational material to the home viewers. Commercial stations in at least fourteen major city areas in the United States cooperate daily with school systems in the telecasting of educational programs to school classrooms. In addition, classroom telecasts are carried on several of the fifteen educational television stations, with programs designed by educators specifically to supplement and enrich classroom instruction. The number of educators involved in this type of activity has shown a steady increase during the past five years.

This dissertation deals with telecasts to the school classroom. Broadcasting to school classrooms is not a new idea; such broadcasts have had a long and very interesting history in radio, with experimentation at the local, regional, and national levels leading to the continued use of radio as a classroom teaching aid. In many localities in this country and abroad, educators are experimenting with television in the school classroom, trying to determine whether or not it possesses the tremendous capacity for teaching which has been claimed for it.
Need for the Study.

Relatively little is known of the effectiveness of television programs in school classrooms, for only a small amount of research has been conducted, although in some areas fairly extensive use has been made of TV in classrooms. Actually, the use of TV in the classroom is still in the experimental stage, due to the newness of the medium. Within the field of entertainment programs in the television industry, telecasters do not know why people watch one program rather than another, why they buy the products they do, or what effect the programs have on a given group of people. Many answers need to be found. In the field of educational telecasts to schools many questions likewise are unanswered.

Under the circumstances of television's rapid expansion and development, it is vital to find out whether television is an effective teaching aid; whether or not it has value enough to justify the effort and expense involved in the planning and production of programs. Educators need to become acquainted with the major problems encountered in school telecasting; how to organize television series most effectively to meet the needs of the classroom teachers who use them; and above all, to find out whether efforts expended in classroom telecasting have a chance of being worthwhile. It is of great importance to emphasize the need for continuing experimentation with telecasts to school classrooms in as many localities as possible, in as many grade levels as possible,
and with as many different research techniques as possible in order to find the answers to these and other questions.

This dissertation was undertaken in order to contribute to the general fund of information concerning the use of television in the school classroom. It deals with a controlled experiment, conducted in the intermediate grades classrooms in the Columbus, Ohio, area. The study includes a report of the techniques used in the organizing and planning of two television program series in the subject areas of art and science. It presents a detailed description of some of the major problems which were encountered in the production of the art and science series, and an attempt to evaluate the effectiveness of the programs. The study was undertaken to add to the general stock of experience in connection with the use of television in the classroom; it was not intended to present the absolute, or final answers to questions. It was hoped that the information provided by this study would make some contribution to the total existing fund of knowledge concerning school telecasting.

**Preliminary Planning of the Study.**

Early in the fall of 1953 a meeting was held at Ohio State University to find out the extent of interest on the part of educators in classroom telecasts, to determine whether telecasts to schools in the area would be feasible, and to decide in which field or fields of study television was most
needed. Those present included the Director of Audio-Visual Education for the Columbus Public Schools, the Director of the Ohio School of the Air, the Coordinator of Radio-TV Education for Ohio State University, the Director of the Bureau of Educational Research, Elementary Supervisors representing the Columbus public and suburban schools, and the writer. Group opinion at the meeting favored developing classroom telecasts in the Columbus area. Discussion indicated that the curriculum areas which presented the greatest need for help in the intermediate grades were art and science. It was decided that a series of classroom telecasts would be produced in each of these two subjects, enlisting the cooperation of the schools in the Columbus area. It was also decided that if possible the programs should be started during the winter of 1953-1954.

To provide a background of information for the study, the writer first reviewed the available literature concerning classroom broadcasting, both for radio and television, including all available research. In addition, information was secured concerning the practices commonly used in presenting educational radio and television from authorities in broadcasting on the Ohio State University Campus, and from visiting educational radio and TV representatives at the Institute for Education by Radio and Television held in Columbus in 1953 and 1954.

After studying the written material related to classroom radio and television a ten item questionnaire was formulated
by the writer as a basis for securing information about classroom telecasting. These were mailed to thirty cities in the United States, where, according to the latest information from the U.S. Office of Education, school telecasting was being done.

Finally, background information was secured by means of direct observation. The writer visited the Philadelphia, Pa., and Washington D.C. public schools for a period of one week in order to observe and analyze the planning, production, and evaluation of school telecasts at first hand.

Following the trip the planning and production of the two series of classroom telecasts began, with the cooperation and assistance of the School of Fine and Applied Arts, and the Education Department of the Ohio State University, along with the staff members of the Ohio School of the Air, the Bureau of Educational Research, and the supervisors of the Columbus public, parochial, private and suburban schools. Members of this group decided that the elementary supervisors should select a group of about forty representative teachers from the schools, each of whom would be invited to enroll in one of two special seminar courses at the university during the fall and winter quarters. One seminar was to work in art education, the other in science education. Each would enroll twenty elementary teachers, and would meet for two hours each week on the campus to accomplish these purposes:
1. To provide the teacher-pupil emphasis or direction for the content of the classroom telecasts. The programs were to be for the pupil and the teacher. The seminar members, all intermediate grades teachers, were to furnish the liason between producer and the classroom.

2. To aid in the planning of the series by bringing teacher-pupil problems to the seminar for discussion and inclusion in the programs.

3. To criticize and appraise individual TV programs and the production techniques used so that improvements could be made in the programs as the series progressed.

4. To evaluate the effect of the programs on their classes.

5. To provide children for participation on the programs, as well as guest teachers when needed.

Presentation of the Series.

The art series and the series in science were planned and presented to the schools of the Columbus area over station WTVN, Channel Six in Columbus, Ohio. The art series began February 17, 1954, and the science series followed on the 3rd of March. Prior to the release of the two series, promotion was planned and distributed, teachers' manuals were written and mailed, and arrangements were made with station WTVN for the use of their facilities for rehearsal and production of the programs on Monday and Wednesday mornings from 10:00 to 10:30. The station management, the school PTA groups, the university, and school administrators joined forces to secure television receivers for the use of
the classrooms for the duration of the series.

The General Nature of the Evaluation.

Information concerning the effectiveness of the classroom telecasts was to be gathered by means of questionnaires, gathering of opinions of the teachers in the production and planning seminar, and by means of teachers observation of their pupils before and after the series. Reports made out by the seminar teachers for each program in the two series were also used in the evaluation. These reports were discussed at the post-seminar meetings, and were used to modify production techniques used on the programs. Another questionnaire sought additional information concerning the effectiveness of the series taken as a whole, from a selected sample of teachers who had used the series. Here, check lists and reports were used to gain the data. In addition, comments and criticisms were solicited from supervisors, teachers, and staff members of the Ohio School of the Air.

Objectives of the Study. Can attitudes and interests be modified by means of classroom telecasts? Can television really teach effectively? Can teachers be an instrumental part of the classroom program planning and production? Is television an effective teaching aid in the intermediate grades classroom? What specific contributions can television programs make to teachers and their pupils? These questions form the central core of this study.
Specifically, the study sought to determine:

1. Some of the contributions which television might make as a supplementary teaching aid in two subject areas of the intermediate grades.

2. Whether regular television series in such subjects would have any appreciable effect on the attitudes and interests of children toward each subject.

3. Whether such a series would have any effect on the attitudes and interests of teachers toward each subject.

4. Whether classroom telecasts in the Columbus, Ohio area would meet with favorable reception from educators, pupils and parents.

5. Whether the Ohio School of the Air, and the Columbus, public, private and parochial and suburban schools could plan and produce classroom telecasts on a cooperative basis using the facilities of a commercial television station.

Two secondary purposes were to be served by the study:

1. To determine whether classroom telecasts would stimulate greater activity and interest in classroom telecasts in the Columbus area.

2. To experiment with and evaluate a planning technique in which a panel of twenty or more elementary teachers aid in the planning, guidance and production of the school television programs.

Limitations of the Study. There were three limitations:

1. The study pertained directly to classroom television programs for the intermediate grades in the Columbus area.

2. The number of classrooms taking part in the experiment depended entirely upon the number of sets available for the classes in the Columbus area.

3. The programs were limited to the subject areas of art and science, and were concerned with supplementary material for the enriching of teaching in the intermediate grades.
Each program series presented unique problems of its own. In order to present the background of school broadcasts, to clarify the problems involved in the presentation of the two series, and to present the results of the planning, production and evaluation in detail, a full description for each of the series will be found in the following pages.
CHAPTER TWO

EXPERIMENTS IN CLASSROOM BROADCASTING

This chapter is devoted to a description of past and present activities of educators in the field of classroom broadcasting. It shows the development of broadcasts to school classrooms both in radio and in television, and describes regular telecasting operations to schools in several areas in the United States where such work is currently in progress.

Experiments in Classroom Radio Broadcasting

During the 1920's in radio's infancy, a number of educators were alert to the educational possibilities of the new medium, radio. This portion of the chapter traces the development of radio broadcasts to schools through 1) some early experiments, 2) efforts of the national networks, 3) broadcasts of a regional nature by private organizations, colleges and universities, and 4) offerings of the local school systems.

Early Experiments

By the year 1927, at least five cities in the United States had conducted experiments in classroom broadcasting by 12.
radio. These early attempts actually led to the establishment of "schools of the air" in several areas in this country.

The New York Experiment. One of the earliest series of classroom broadcasts was started by the New York City Board of Education and faculty in 1923. Broadcast in 1924, it is credited by Ben Darrow as being, "the pioneer of all schools of the air."\(^1\) It was produced by the faculty of the Haaren High School and the program content involved lessons in accounting. Programs were broadcast over station WJZ in New York City. The series lasted from February to May of 1924.\(^2\)

The Chicago Experiments. A second locally produced series was initiated and broadcast by station WLS in Chicago. In 1924, Ben Darrow founded the "Little Red Schoolhouse", a series of radio programs for high schools, elementary and country grade schools. The programs featured art, music, and geography, and were the first to provide the schools with lesson materials in advance of the broadcasts. The programs reached an audience of about 27,000 school children.\(^3\) The series ended in 1925 when Darrow left WLS.

In 1926 station WMAQ in Chicago initiated a series of

\(^1\) Ben H. Darrow, *Radio, the Assistant Teacher*. (Columbus, Ohio, R. G. Adams & Co., 1932) p. 18.
\(^2\) Darrow, *op. cit.*, p. 19.
classroom broadcasts which was continued for a number of years. They were originally planned by Judith Waller, the station director, with the aid of three school principals. The programs were thirty minutes long and during the first year, three programs were broadcast each week, dealing with art, music, and prominent speakers. By 1927 bulletins were printed each month and distributed to the schools free of charge. The 1928 schedule included lessons in geography, science, music appreciation, literature, stories, history, and current events. In 1930 WMAQ assigned the entire problem of developing these school broadcasts to the educational staff of the Chicago Public Schools, when Judith Waller became the National Broadcasting Company's educational director for the Midwest. The series was planned for and by the Chicago Public Schools as a continuing series until 1934.

The Oakland Experiment. This experiment involved a series of thirty-six twenty minute school broadcasts intended for the intermediate grades. Planned and organized by an Oakland teachers' committee in 1925, the programs were broadcast over station KGO, Oakland. Subject matter covered in the lessons included English, geography, history, arithmetic, penmanship, guidance, drawing, science, thrift, music, composition, and manual arts. The broadcasts were discon-

5 Loc. cit.
6 Atkinson, op. cit., p. 140.
tinued in 1926.

The Cleveland Experiment. The first attempt at school broadcasting in Cleveland was made in 1925 by station WTAM under the direction of Alice Keith. The Cleveland Symphony Concerts were used to teach music appreciation. These broadcasts were more carefully organized and adapted to classroom requirements in 1926, when WTAM broadcast them twice a week to the primary and intermediate grades, and to the junior and senior high schools of Cleveland.7

A textbook was prepared by Miss Keith for the use of the teachers in preparation for the programs. The Cleveland Plain Dealer carried a special illustrated article each Sunday, which explained the coming radio concerts. The broadcasts ended in 1929, when Miss Keith was called to the Columbia Broadcasting Company to assume duties as the director of the "American School of the Air."8

The Atlanta, Georgia, Experiment. An experimental series of classroom broadcasts was aired by station WSB, Atlanta, in 1926. It was organized by Dr. Willis A. Sutton, the superintendent of the Atlanta Schools. Programs were thirty minutes long, and the classes served began with kindergarten and continued on up through junior and senior high school. The programs included music appreciation, nature lore,

7 Darrow, op. cit., p. 27.
8 Darrow, op. cit., p. 27.
history, literature, and effective study habits. No printed teachers' aids were distributed for this series, but weekly schedules were printed in the Atlanta Journal. These programs ceased in 1929, but paved the way for later educational broadcasting in the Atlanta area.

**Summary.** Before 1927 at least six broadcasting stations in five cities had scheduled radio programs for use in school classrooms, with varying degrees of success. These stations were, WLS, Chicago, and WJZ New York, which began in 1924, WTAM, Cleveland and KGO, Oakland in 1925, WSB in Atlanta in 1926, and WMAQ, Chicago also in 1926. Those producing the programs seemed equally interested in all of the grades. Earliest programs were intended for use in schools, but were subsequently expanded to serve the needs of students from primary grades on through high school. The Cleveland, Chicago, and Oakland series were originally planned for use in the elementary school grades, while Atlanta gave emphasis at first to junior and senior high schools. Favored areas of their radio curriculum were music appreciation, science, geography, literature, stories, manual arts, and current events.

These beginnings, although abortive in some instances, encouraged and stimulated the interest of educators and broadcasters in the field of classroom programming and led to the development of nation-wide and regional broadcasts to

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classrooms.

Efforts of the National Networks

The National Broadcasting Company. The first nationwide broadcast planned and conducted for the use of school classrooms was launched by the National Broadcasting Company in October, 1928.\textsuperscript{10} The programs presented were in music appreciation, and were conceived by Dr. Walter Damrosch, a nationally famous figure in the field of music.

By 1929 the network had established a series of six weekly broadcasts for classroom listening on a national basis. Of these five were on the Blue Network, while only one was on the Red Network. Curriculum areas served by the series included science, literature, health, history and music appreciation.\textsuperscript{11} The music series, led by Dr. Damrosch, was the most popular of NBC's offerings, being used in about 70,000 schools and heard by seven million school children at the peak of the series' popularity. One by one, the series were dropped from network's schedules between 1938 and 1940, until only Dr. Damrosch's Music Appreciation Hour remained. This stopped in 1942 with his retirement.\textsuperscript{12}

The Columbia Broadcasting System. "The American School of the Air" produced by the Columbia Broadcasting System, and

\textsuperscript{11} Willey and Young, \textit{op. cit.}, p. 167.
\textsuperscript{12} Willey and Young, \textit{op. cit.}, p. 167.
prepared with the advice of a committee of prominent educators made its appearance during the 1929-30 school year. The series was scheduled for broadcast five days a week at the same hour each day. Elaborate and attractive teachers' manuals were prepared and distributed free to teachers writing in for them.

The basic philosophy of the "American School of the Air" was to make the programs both good radio and good education. The first goal was attained by securing the services of professional CBS writers, producers, actors, announcers, and musicians; the second by extensive cooperation with national educational organizations and individual educators.

Although the curriculum of the "American School of the Air" was altered many times during the year the series was on the air, offerings were generally focused upon history, geography, current events, social studies, literature, science and nature study, and music. The "School" was very successful, and was well received by teachers and pupils alike. It came to an end in 1948.

The Mutual Broadcasting System. Mutual never had any school programs of its own origination, preferring to re-broadcast school programs originated by other groups.

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13 Darrow, op. cit., p. 20.
14 Willey and Young, op. cit., p. 385.
15 Woelfel and Tyler, op. cit., p. 56.
for educators in terms of professional standards of production, common educational experiences, and planning and organization.

Regional Broadcasts to School Classrooms

Experiments in classroom broadcasts have been conducted on a regional basis by colleges, universities, state departments of education, and private organizations. Classroom broadcasts have been presented over both commercial and educational radio stations.

The Standard School Broadcast. An example of school broadcasts presented by a private sponsor is the Standard School Broadcast, which had its beginning in California during the 1928-29 school year. It originated on the National Broadcasting Company's Blue network, and in 1940 became a Don Lee Broadcasting company feature. Today, by transcription and network it is broadcast on the west coast, as far east as Salt Lake City, Utah, and also west to Alaska and Hawaii. It was originally produced by the Pacific Coast Division of NBC with the Standard Oil Company of California as sponsor. Today the same sponsor has its own production staff for producing the programs. The Standard School Broadcast has consisted of a morning program aimed at school children. It follows a carefully planned scheme for develop-

ing music appreciation, and, also for many years presented a description, analysis or dramatization of music to be played that same Thursday night on the "Standard Symphony Hour."

There are no commercials other than mention of the sponsor's name at the beginning and close of each program.

The material is authoritatively presented by qualified educators, and close contact is maintained with the schools using the programs. Surveys conducted by the Standard Oil Company have shown the audience includes 5,000 schools which listen regularly, with more than 500,000 students and 20,000 educators.\(^\text{18}\)

These broadcasts have achieved a high degree of success as a long continuing classroom series using many commercial stations over a large area.

**The Ohio School of the Air.** Although Ohio State University's radio station WEAO (now WOSU) was on the air as early as 1921, it did no broadcasting to schools until 1928. Formation of the school of the air was undertaken by the State Department of Education, October 19, 1928. The first broadcast to the schools of Ohio was made three months later, January 2, 1929. Its audience grew during the depression years, and by 1931 the circulation of the *Courier*, the printed manual furnished the teachers, reached 12,000.\(^\text{19}\)

Emphasis was placed on programs for primary grades, since the network offerings were emphasizing subjects taught in the

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\(^{18}\) Woelfel and Tyler, *op. cit.*, p. 76.

intermediate grades. Subject areas served by the "School" during the early years were music, history, art appreciation, and literature.\textsuperscript{20}

By 1945 the organization of the school had changed, with the "School" transferred to the Bureau of Educational Research at Ohio State University, where it remains to the present time. Production and transmission of the programs of the "School of the Air" is still done by the university station, WOSU.

In 1953-54, the "School" was celebrating its Silver Anniversary. Year by year, it changed its "curriculum" and improved its courses with the aim of increasing their value as classroom aids to the teacher. Programs have been prepared for the primary and intermediate grades, offering helpful materials in the subject areas of music, Ohio history, current events, American Folk Music, natural science, literature, and general science. The programs, fifteen minutes in length, were broadcast Monday through Friday over WOSU between 1:30 and 2:00 p.m.\textsuperscript{21}

\textbf{The Wisconsin School of the Air.} Wisconsin's school broadcasts began in the fall of 1931, with programs aired by the University Stations WHA and WLBL, and featuring ten weekly programs for grade school use.\textsuperscript{22} Programs ranged from natural

\begin{itemize}
\item \textsuperscript{20} Woelfel and Tyler, \textit{op. cit.}, p. 77.
\item \textsuperscript{21} WOSU Program Bulletin, Vol. VIII, Ohio State University, September 15, 1953, p. 1.
\item \textsuperscript{22} Frost, \textit{op. cit.}, p. 464.
\end{itemize}
science and conservation to current events. Since 1931 the "School" has produced and broadcast roughly a dozen school series a year. In 1943 and 1944 eleven classroom series were broadcast, serving the primary through intermediate grades. Teachers' manuals were distributed to the schools to help the teacher in using the programs.

In 1953-54 the "School" was celebrating its twenty-third year in active school broadcasting. Ten series were produced on WHA, WLBL, and the six FM educational stations of the State of Wisconsin, serving the primary and intermediate grades with courses in the school areas of conservation, social studies, health, art, music, current events, language arts, and games. The Wisconsin School of the Air is the first in the nation to have an FM network of six stations over which to broadcast to the schools. It is considered one of the finest regional schools of the air in the nation.

The Minnesota School of the Air. The Minnesota School of the Air came into existence in the fall of 1943 with a series of nine classroom broadcasts over the University Station WLB, later assigned call letters KUOM. Intended for high school classes, the series dealt with world understanding, news background, literature, health, current events, music appreciation, and great authors. The "School"

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23 The University of Wisconsin, School of the Air Bulletin & Manual, (Radio Hall, Madison 6, Wisconsin), p. 3.
24 Woelfel and Tyler, op. cit., p. 83.
25 Woelfel and Tyler, op. cit., p. 83.
expanded and improved its courses as it continued, and after ten years of broadcasting presented thirteen series to the schools in 1953-54. In addition, the programs were tape recorded and made available to teachers by the "Tapes for Teaching Project" of the Minnesota State Department of Education, to aid teachers who had scheduling problems. The emphasis of the Minnesota School of the Air had shifted by 1953 from high school to the elementary grades, with some programs for primary and the kindergarten area. New subject fields covered by the series were: art, theater, conservation, and American History.26

The Oregon School of the Air. Station KOAC, the educational station of the state of Oregon, began its school of the air broadcasts in 1933 in cooperation with Oregon State College, the University of Oregon, and the colleges of education in the state. Early programs were directed to high school classes, the first course to be offered dealing with rural electrification. A course in general science for high school was added in 1934, along with two music courses, one for high school and the other for elementary grades.27 By 1941 the emphasis had shifted from high school to the primary and intermediate grades, with programs in elementary civics, Oregon History, folk tales, health and safety, American History, and agriculture.

26 University of Minnesota, Station KUOM, Minnesota School of the Air Bulletin, Vol. LVI, 40, August 21, 1953, pp. 3-4.
27 Atkinson, op. cit., Broadcasting to the Classrooms by Universities and Colleges, p. 77.
Government, and current events. In 1953-54 the "School" presented thirteen series, serving primary through the eighth grades, with curriculum service in science, current events and music appreciation. Most programs were carried by station KBPS of the Benson Polytechnic High School in Portland, and station KRVM-FM of Eugene Public Schools, in addition to KOAC.

**Summary.** Each regional broadcast to schools studied here shows similar patterns of development. The Standard School Broadcast stands apart somewhat from the broadcasts of the colleges and universities since it has been a sponsored broadcast, and deals only with one subject area: music appreciation. It covers a wide geographical area, using transcriptions and a commercial radio network, while schools of the air broadcast their programs over the university or college educational stations of their states.

The curriculum areas served by each "School" bear some resemblance one to another. Music, literature, art, science, health, and news were common denominators in programming. Two of the four schools of the air began by offering programs to the elementary grades, and although Minnesota and Oregon started with largest emphasis on high school service, there was an early tendency to drop secondary school service due to the problem of scheduling programs in the high school classes.

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All four of these representative schools of the air operate with the same basic purpose; that of presenting radio broadcasts to school classrooms in order to supplement existing methods of instruction. The programs are primarily teaching aids, and, of course, do not take the place of the classroom teachers. Rather, are they intended to help the teacher by enriching the curriculum, and by demonstrating effective teaching methods. Appealing to a wide school audience, these broadcasts must generalize their material sufficiently so that it may supplement the curricula of all the schools, rural and urban alike, without dictating or directing the specific content to be taught.

The schools of the air across the nation, many of which were organized along lines similar to those examined, have encountered some difficulties in gaining acceptance in an academic world where "indifference" was the keynote by the majority of teachers. Some schools even prohibited the use of radio in the classrooms, for supervisors feared that radio might replace the classroom teacher. Though reaching sizeable audiences the early schools of the air reached only a fraction of the potential audience. This situation has improved gradually as better administration and planning became evident in the school broadcasts.

Broadcasts to Classrooms by Public School Systems

An examination of classroom broadcasting would not be complete without some attention being devoted to the efforts
of public school systems. Of the cities which were engaged in school broadcasting at an early date, and those who have started since 1946 when the FCC set aside twenty channels of FM spectrum for educators, several stand out as leaders in cities where school broadcasts have been significantly developed. Akron, Atlanta, Chicago, Cleveland, Detroit, Indianapolis, New York, Portland, San Francisco and St. Louis are cities which would head such a list. A brief examination of three public school operations will provide a pattern of the organization, development and programming.

The Cleveland Board of Education, Station WBOE. Following the music appreciation lessons started in 1925 by Alice Keith, the school system of Cleveland experimented with arithmetic lessons on radio. New series were added yearly, with experiments in music, social science, geography, elementary literature, English, elementary science, and upper elementary safety, programs being broadcast from 1925 to 1938 by Cleveland's commercial radio stations. In 1939, the Cleveland Public Schools set up and began operating station WBOE on a frequency of 41,000 kilocycles. Since that time the station and its staff have evolved new techniques in radio teaching, broadcasting school programs daily from 8:00 a.m. to 3:30 p.m.

30 Cleveland Public Schools, Report of Radio Activities, 1938-39, Station WBOE, Cleveland, Ohio, p. 4.
32 Ibid., p. 35.
The length of lessons varies according to the course and grade level being taught, broadcasting schedules are adjusted to the school schedules, rebroadcasts are used to fit class schedules, and pauses are written into the radio scripts to allow time for work and activity by the pupils in the classes. Slides and visual materials are also used in conjunction with different programs.

During the 1953-54 school year fourteen series were presented for the kindergarten through sixth grades. Subject areas served were literature, music appreciation, health, handicraft, language arts, arithmetic, social studies, English, current events, art, Spanish, French, natural science, and safety. Another fourteen series were presented for junior and senior high school classes. These included work in art, industrial art, language arts, mathematics, social studies, music, general science, languages, physical science and current events. Programs have been supplementary teaching aids and teaching demonstrations designed to help both the teacher and the pupil.

Since its beginnings in classroom broadcasting, station WBBOE has explored the educational possibilities of radio broadcasts to the classroom on an extensive scale, spanning most of the school curriculum from the primary grades on through high school and achieving new concepts of teaching.

33 Cleveland Public Schools, 1953-54 Program Schedule, WBBOE, p. 4.
methodology in radio in many phases of its work. Programs are extensively used by most of the Cleveland Public Schools, including suburban and surrounding area schools. The station now operates on F.M.

The Radio Council of the Chicago Public Schools, Station WBEZ-FM. Classroom broadcasts were used in Chicago from the early twenties to 1934 when they were discontinued until 1937. An epidemic of polio in August of 1937 resulted in the inauguration of a series of programs intended for the third through eighth grades, produced under the direction of the Board of Education in Chicago. Broadcast over seven of the city's commercial stations for the duration of the epidemic, the programs served to bring classwork in arithmetic, science, English and social studies to the children who had to remain at home. These programs demonstrated to the public that radio could be effective in the classroom. The Radio Council of the Chicago Public Schools was formed in the same fall of 1937. The Council presented ten series yearly from its inception, and actively promoted in-service teacher training in the use of radio in the classroom.

The Chicago Board of Education opened its own radio station WBEZ, and FM outlet, in 1943. Due to the limited number of FM receivers in the schools, most of the Council's programs continued to be aired over stations WIND and

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34 Willey and Young, op. cit., p. 386.
35 Woefel and Tyler, op. cit., p. 98.
WJJD. 36 Emphasis was given to programs for the upper elementary grades, with only a few programs for the primary and high school classes. Ten series were broadcast covering subject areas of language arts, social studies, current events, geography, and literature. A teachers' manual was prepared and distributed for each series.

Expansion and revision of the curriculum was carried out yearly and by the 1953-54 year the Council was offering a total of sixty-five weekly programs or program series to the public schools in the Chicago area. By 1954, approximately 2800 FM-AM sets had been installed in the Chicago Public Schools. The audiences for the various programs varied in size from 45,000 to 65,000 children. 37 Emphasis in programming had been changed from earlier years, with a fairly balanced offering for grades from primary through junior and senior high school and some programs for college use. Subject matter programmed included science, music, safety, health, social studies, language arts, English, mathematics, drama, citizenship, vocational guidance, history, and current events. 38

The Public Schools of St. Louis, Station KSLH. St. Louis, Missouri joined the ranks of those cities whose

37 George Jennings, (Personal Letter).
38 George Jennings, Broadcast Schedule of Radio Council of Chicago, Chicago Public Schools, First Semester, 1953-54.
boards of education owned and operated FM radio stations for broadcasting to the community and schools in April of 1950. Prior to this time the St. Louis Schools had been broadcasting via the facilities of commercial station KMOX for a number of years. Four series had been broadcast over the commercial station, all intended for the elementary grades, and dealing with science, social studies and music.\(^{39}\)

During 1950, thirteen series were presented over KSLH for the elementary grades in the St. Louis Area. Subject matter included: science, poetry appreciation, industrial arts, foreign languages, history, current events, music, vocational guidance, social studies and language arts. Teachers' manuals were distributed to teachers using the programs in their classes.

Since 1950 there has been a continuing increase in the purchase of good FM radio sets in the St. Louis Schools. There has also been an increase in the number of school programs provided with the year 1953-54 showing thirty series produced for the schools over KSLH. The new programs offered during 1953-54 were in the areas of social studies, language arts, mathematics, and foreign languages.\(^{40}\) Three new college series were also provided dealing with social studies and language arts.


\(^{40}\) St. Louis Board of Education, Program Bulletin, Fall Semester, KSLH, 1954, pp. 2-4.
Summary. The writer has surveyed the offerings to classrooms of stations owned and operated by city boards of education in three large metropolitan areas. The first two in Cleveland and Chicago, have been used as a pattern for other local operations that have sprung up and are still being organized across the country. The third, KSLH in St. Louis, is one which was modeled to an extent upon the Cleveland operation. It is evident from an examination of the programming that the city school system broadcasts are more specific and all-inclusive than the wider reaching schools of the air of the colleges and universities. The major advantage of the locally produced programs is that the broadcasts can be tailored to meet the specific needs of the school system of that particular community. Teacher training can be one of the definite goals of the broadcasts, as in the case of Cleveland. The broadcasts can easily become lessons, since it is easier to integrate the local broadcasts to the school curriculum.

All three of the cities referred to in this section have their own FM radio-broadcasting stations, and use these for school programming. All three had their beginnings using the facilities of commercial broadcasters. Favored areas of programming in the three stations surveyed were music, science, language arts, arithmetic, social studies, languages, and news, with program experimentation being carried on in the fields of arithmetic, foreign
languages, poetry and drama. All three city-operated stations offered programming to high schools; a feature which regional schools of the air dropped due to scheduling problems. One of the three stations offers courses by radio for colleges in its area, a feature which the regional schools of the air have not attempted.

The stations studied use their facilities principally for school broadcasting as contrasted with stations carrying the Ohio School of the Air, the Wisconsin School of the Air, Minnesota School of the Air, and the Oregon School of the Air. This gives them a further advantage of repeating broadcasts to fit school schedules. The university or college owned stations offering adult education and cultural program to the adult audience as well as to school audiences, are bound by programming requirements and are not as readily able to offer this type of service. Thus, another advantage of the locally-owned educational station is that it can operate entirely for the schools, and hence can broadcast a wider variety of programs intended for grades ranging from primary through high school, since it can repeat its programs to fit in with high school schedules. With more and more city school systems opening FM stations, it may well be that this type of school broadcasting will fill the place left by the networks, and, working side by side with the regional operations, provide a complete service to a much larger number of schools than the number served today.
Each system can effectively meet the peculiar needs of its area, providing service to city, rural, and small town schools, and giving a flexible teaching aid to schools in all locations.

**Early Experiments in Telecasting to School Classrooms**

Prior to 1950, four public school systems had experimented with the use of television programs in the classroom. With educators using radio successfully in scores of school-operated AM and FM stations across the country, the appearance of TV following the close of the second world war was watched with interest. Already convinced of the teaching value of the film, many educators believed that with its greater flexibility and sense of immediacy television could be an even more effective means of presenting information in the classroom. Some hailed it as the answer to the educator's prayer; the end of the teaching shortage. Other more cautious educators agreed that nothing could ever replace the face-to-face contact of the classroom teacher and her pupils, but that television might one day take its place as a useful teaching aid in the classroom as well as providing a means of entertainment and amusement in the home.

To several educational organizations it posed an immediate challenge to experiment not with their own sta-
tions, since only one school-owned station was on the air in 1950, but using the facilities provided by commercial stations.

Experimentation with classroom television first appeared in the eastern part of the United States, with Philadelphia, Pa., making a start in 1947. Baltimore and Washington, D. C. followed soon after, with programs in 1948 and 1949. The move spread westward to Minneapolis, Minnesota, in 1949. Other school systems soon joined in the experimentation, and before the FCC had set aside the 242 channel reservations for educational use in 1952, a total of eight city school systems and one university had inaugurated educational telecasting to schools on an experimental basis. Experimental telecasts were being presented in Seattle, Washington, in Montclair, New Jersey, in San Diego and Los Angeles, California; and in the State of Iowa, in addition to the cities already mentioned.

All of the eight school systems experimenting with classroom telecasts did so through the facilities of commercial television stations. The Iowa State Department of Instruction used WOI-TV, then the only TV station in America owned and operated by an educational institution, but this station, too, operated commercially.

Of the nine institutions experimenting with educational telecasts, five were primarily interested in telecasting to the elementary grades, while the rest telecast programs for
both elementary and secondary levels. Music, art, and science were the most popular curricular areas for the television programs, with six of the nine schools featuring program series in one or more of these areas in their initial attempts. Both fifteen minute and thirty minute formats were tried in the experiments, with thirty minute programs being the more popular.

At least four of the experimenter made their television debuts by means of the production of programs of a public relations type intended primarily to interpret the work of the school system to the parents. These programs led to classroom broadcasting.

Looking back at the early experiments in radio, it could be pointed out that the favored curriculum areas in television experimentation were quite similar, with a major interest in music, science, current events, and geography. It could equally be said that there were marked differences. Social studies (including geography, history and current events) were extensively used on radio, but not in television; art, on the other hand, was a natural on television but rather rare on radio. Literature (stories, etc.,) was common on radio, but not on television.

Contrasted with those on radio, the bulk of the television experiments seem to have been initiated by the schools, whereas in early-day radio several were initiated by members of station staffs. More evaluation was done in the early TV
experiments than in those using radio. The emphasis for grade levels appears to have been slightly different in television than in radio, with radio in the earliest days more interested in programs for junior high and high school levels, whereas early classroom television programs were intended principally for use in the elementary grades, although some of the experimenters programmed for both elementary and high school. Cities which led in classroom radio experimentation have not done so in television.

School systems experimenting with classroom telecasts presented their programs to audiences of varying size, ranging from thirteen schools participating in the Montclair, New Jersey experiment, to 100 schools cooperating in Central Iowa for the Iowa experiments. Philadelphia began with seventy schools in 1947; San Diego with thirynine, and Washington, D. C. with twentyfive.

Techniques of planning and presentation varied considerably. Philadelphia, Iowa, and San Diego began with multiple series of programs; Washington, Seattle, Baltimore and Los Angeles featured single program series, and occasional 'one shot' type programs. Minneapolis emphasized special events programs, and the Montclair experiment was based on single programs all telecast in one day. Philadelphia telecast its experimental programs over all three of the local commercial TV stations, Baltimore and Seattle used two stations each, and the remainder telecast over only one station each.
These efforts represent the beginnings of classroom telecasting in the United States. Each effort represented three things which those who were responsible had in common:

1. The urge to experiment and evaluate the new medium;
2. The courage and enthusiasm plus the determination to step into the new field and develop techniques to use it for educational purposes;
3. The desire to cooperate with commercial stations to do the job.

The experimental efforts led to regular, continuing classroom telecasts in many of these cities. Their work in classroom telecasting is described in the section which follows.

**Regularly Scheduled Telecasts to Schools**

Following the experimentation in the nine localities referred to above, continuing classroom telecasting on a regular basis was carried out in many of these cities. This portion of the chapter traces the use of television in these cities, and describes the organization, the offerings, and areas of service provided.

**The Philadelphia Public Schools.** Following the experimental telecasts in 1947 and 1948, in which "Operation Blackboard", "Operation Classroom", and "WFIL School House" had their beginning and trial run over a five month period, educators in Philadelphia were convinced that television could make a definite contribution to classroom instruction. As a result, a permanent program of classroom broadcasts was
inaugurated in 1949 and has continued through the present date. Dr. Louis Hoyer, Superintendent of Schools in Philadelphia, spearheaded the development of classroom telecasting, assisted by Gertrude Golden and Allen H. Wetter, Associate Superintendents, and Martha Gable, Assistant Director of School-Community Relations. These people, along with a radio and television staff of eight full-time members, organized and planned the regular classroom telecasts.

"Operation Blackboard" is the title of the series telecast to schools daily, five days a week from 10:00 to 10:30 a.m. by station WPTZ (TV). The individual programs are planned to be used as supplementary teaching in the classroom. Program content is worked out by the Radio-TV Staff of the Philadelphia Public Schools, along with curriculum committees directors of special subjects, and their staffs, teachers and administrators. The supervision and coordination of radio and television activities falls to Martha A. Gable, Assistant Director of School-Community Relations. Evaluation reports of the programs are solicited by the staff and received from teachers and pupils. The reports are made the basis of program planning.

42 Loc. cit.
During the 1952-53 school year, "Operation Blackboard" included programs for primary grades on through upper elementary and secondary grades. Six twelve week series were telecast; all programs were of thirty minutes duration. They covered the following subject areas:

1. Rhythmics and Music. Primary Grades.
2. Arithmetic. Grades 1, 2, and 3.

The Philadelphia School System presented a second series called "WFIL Schoolhouse" during 1952-53. Consisting of six program series, with each series of 30 weeks duration, programs were telecast over station WFIL-TV on a five-day-a-week basis from 11:00 to 11:15 a.m. They included programs for kindergarten on up through the secondary grades. The subject areas covered were:

1. Health Education. 4, 5, and 6th Grades.
2. Social Studies. Upper Elementary and Junior High Grades.
6. Literature. 4, 5, and 6th Grades.

As in the case of the "Blackboard" series, the school system provided teachers manuals for the programs.
The "Stop, Look, and Learn" series which was presented by station WCAU-TV was designed to answer a variety of needs both for the classroom and for the home viewing audience. A typical program in this series was one called By Request, aired during 1952. Broadcasts were seen on Mondays from 3:15 to 3:30 p.m., and included discussions and illustrations of the techniques of playing the flute, beginning square dancing, advanced square dancing, and correct usage of the English language.44

Very early in their telecasting to classrooms, the Philadelphia Public Schools adopted three primary guiding principles in the use of television in the classrooms. They resolved:

1. To produce telecasts which would provide materials, personalities, and skills that otherwise would be unavailable to the classrooms.

2. To feature unusual projects of techniques under way in a few schools, in order to encourage other teachers and classes to undertake similar projects.

3. To encourage the use of television in the classroom when history-making events are televised, such as the signing of the Atlantic Pact and the inauguration of the President.45

That these guiding principles have proved workable for Philadelphia and that school telecasting has been reasonably

44 Dunham and Lowdermilk, op. cit., p. 16.
successful is attested to by these facts: 46

1. The year 1953 marked the sixth anniversary of school telecasting by the Philadelphia Public Schools in cooperation with local commercial stations.

2. Excellent, continuing cooperation in production and evaluation of programs has been received from all of the schools in the Philadelphia area during the six years.

3. The weekly television audience of pupils has risen from a few hundred in 1948 to 70,377 in 1953.

4. The number of television sets in the schools in the area has increased from seventy in 1947-48 to 240 in 1953.

5. Both television station managers and school administrators are enthusiastic and impressed with telecasts to the classrooms.

6. "Operation Blackboard" received first award for in-school telecasts for the second consecutive year at the Ohio State University Institute for Education by Radio and Television in 1953.

The Baltimore Public Schools. The first regularly scheduled television programs for school use in Baltimore began September 20, 1949. 47 A total of seventeen programs were telecast over WBAL-TV on Fridays from 2:30 to 2:45 p.m. during the 1949-50 school year. One series intended for use in elementary grades, consisted of five lessons on how to play a tonette, one lesson on safety, and two library


lessons. A later series, intended for use in secondary schools, included three social studies lessons, four aviation lessons, and two lessons in guidance. Other programs of a primarily public relations nature were produced by the Baltimore schools.

During the first year of regularly scheduled telecasting to the Baltimore schools (1949-1950), a survey conducted for the schools showed that the programs intended for the use of the elementary schools reached an audience of roughly 4800 children. Another thirty-four children appeared before the television cameras as performers. Six teachers were used on the programs; four as performers, and the remaining two as production assistants. Concerning the television programs broadcast to the secondary schools for the same year, 4300 children viewed these lessons, while eight students appeared before the cameras as performers. Sixteen teachers worked on the secondary school programs as performers, and two as production assistants. All of the programs were telecast over station WBAL-TV, in Baltimore.

During the following year the Baltimore Public Schools continued telecasting programs for the elementary and secondary grades over the commercial stations in Baltimore. Program series were developed in the areas of history, safety, music appreciation, language arts, science and music.

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48 Ibid., p. 2.
49 Kane, op. cit., p. 6.
The 1953-54 school year found the Baltimore Public Schools presenting classroom series over WAAM (TV), WBAL-TV, and WMAR-TV.  

Three series of programs, telecast on WAAM (TV), were scheduled on Tuesday and Thursday mornings from 10:45 to 11:00. The following subject areas were covered:

1. Safety. Intermediate Grades. (16 programs)

Two series scheduled on station WBAL-TV were telecast from 10:00 to 10:30 a.m. on Tuesday and Thursday. Both were thirty minutes long. The third and fourth series were telecast from 2:00 to 2:30 p.m. on Tuesdays and Thursdays. Curriculum areas served by these programs were:

1. History Upper Elementary Grades. (13 programs)
3. Reading Elementary Grades. (5 programs)

Only one series was telecast over WMAR-TV during the 1953-54 school year. It dealt with current events, and was intended for the elementary grades. It was telecast on

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50 Eleanora Kane, (Personal Letter.)
51 Kane, loc. cit.
52 Kane, (Personal Letter), op. cit.
Fridays from 10:00 to 10:15 a.m., and was of eighteen weeks duration.53

During 1953 and 1954 the Baltimore Public Schools presented a total of 232 television programs, of which 90 were classroom telecasts. Classroom telecasts were aimed at both elementary and secondary grades. A total of 2,444 persons appeared on the 232 programs, and the planning, and production involved the work of 566 more persons. The total number of persons involved in the television programs was 3,010.

The Newark, New Jersey, Public Schools. The Newark, New Jersey, Public Schools have been receiving regularly scheduled telecasts especially designed for classroom use since October of 1951, when an early series for elementary schools, prepared by the Newark Museum and the Department of Libraries, Visual Aids and Radio of the Newark Public Schools was aired each Monday from 1:00 to 1:30 p.m. over station WATV (TV). The series was called "Science Lesson".54

Since 1951 regularly scheduled classroom series have been telecast to the schools in the area, with programs offered in art, languages, music, language arts, teacher training, mathematics, and guidance. In addition to these, the schools have telecast programs in general public relations, and recreational programs for the general audience.

53 Ibid.
54 Newark, New Jersey, Dept. of Radio-TV, (Personal Letter.)
The philosophy of the Newark School system is to run short series of programs in the curriculum areas. Series most frequently have been of six weeks duration, which allows those planning and producing them to experiment with various subject areas in order to test their television worthiness and practicality. The program dates are set up six months in advance in order to insure the best school and community publicity and to allow time to prepare and distribute teachers' manuals and guides for each series. All phases of the programming to schools are coordinated by the supervisor and assistant of the Radio and TV Department of the Newark Schools. Teachers' manuals and guide sheets are provided for all courses. Scripts are written by the Department in cooperation with the participating teacher or school.\(^55\)

During the 1952-53 school year the following classroom telecasts were offered to the Newark area schools; over station WATV, on Wednesdays from 3:30 to 4:00 p.m.\(^56\)

2. Art. Elementary Grades. (6 programs)
3. Mathematics. Elementary Grades. (4 programs)

In the fall of 1953, station WATV was still telecasting the school programs. The time was shifted to 1:00 o'clock

\(^{55}\) Newark, N. J., Dept. of Radio-TV, (Personal Letter).

on Wednesdays, with programs scheduled from 1:00 to 1:30 p.m. 57

1. Literature. Elementary Grades. (6 programs)

2. Music (Album of Music) (4 programs)
   (1 for Kindergarten)
   (1 for Elementary Grades)
   (2 for Secondary Grades)

Since the first telecasts in 1951, the Newark Public Schools have televised school series in the curriculum areas of science, art, language, music, teacher training, mathematics, guidance, and parent-children relationships, on a continuing basis in cooperation with station WATV in Newark.

The Washington, D. C. Public Schools. Following the experimental programs to school classrooms which began in 1951, and were carried on through the spring of 1952, the Public Schools of the District of Columbia, in cooperation with station WNBW (TV) (now WRC-TV), presented regularly scheduled television lessons in the following curriculum areas of the elementary schools: science, music, Spanish, and French. All of the programs were fifteen minutes in length, and were telecast four days each week to the elementary grades in sixty-nine of the city schools. 58 The telecasts began in September of 1952, and were scheduled Tuesdays through Fridays from 10:30 to 10:45 a.m. Teachers' manuals and helpful guide sheets were planned and distributed to teachers using the telecasts.

57 Newark, N. J., Dept. of Radio-TV, (Personal Letter).
A survey taken of the school audience was conducted in 1953. It was found that the TV lessons were received in 303 classes by sixty-nine of the Washington D.C. Schools.\(^{59}\)

During the 1953-54 school year the schools were receiving five programs a week over station WRC-TV from 9:30 to 9:45 a.m. There were thirty fifteen minute programs in each series, serving the following curriculum areas:\(^{60}\)

2. Science. 4, 5, and 6th Grades.
3. French. 4, 5, and 6th Grades.
4. Spanish. 4, 5, and 6th Grades.

The District of Columbia Public Schools began their fifth consecutive year of educational telecasts on Monday, September 13, 1954, over station WRC-TV. The school series likely added a milestone in the development of educational television by offering two of its program series for sponsorship to a commercial concern. School administrators felt that "through dignified sponsorship, educational telecasting will become stabilized and assured through the years ahead."\(^{61}\)

The schedule for 1954-55 again included five programs a week intended primarily for the elementary grades. Only one

\(^{59}\) Ibid., p. 5.


new program series appeared, that being one of the sponsored programs called, "Behind the News", which replaced the music program scheduled in earlier years. The series used news as its starting point to teach about science, art, sports, history, politics, and people. The 1954-55 programs were telecast over WRC-TV Monday through Friday from 2:45 to 3:00 p.m.

Certain basic principles are observed in the Washington, D. C. School telecasts. Educators planning and supervising the television series believe:

1. The television program is not a show. Although it may show interesting things, and of itself be interesting, it is not designed to be entertainment.

2. The children in the classroom do more than simply watch; they participate.

3. The studio teacher does not take the place of the classroom teacher. She supplies a specialized skill, content or method of presentation which cannot be duplicated easily by the regular teacher.

4. Television programs are not an isolated part of the child's experience. He is prepared for it by planning within the classroom. He engages in follow-up activities after the studio lesson is over.

Television in the classroom has met with evident success and favor in Washington, D. C., where the emphasis has been placed on the elementary grades since the first experimental programs in 1951.

The San Diego Public Schools. During the 1953-54 school year the San Diego Public Schools produced a total of 103 regularly scheduled telecasts for school consumption. Of these, thirty programs were for the elementary schools, and the remaining seventy-three for the use of secondary school classes. These programs were produced over both of the two commercial TV stations serving the San Diego area, KFMB-TV and KFSD-TV. School telecasts were scheduled for Tuesdays and Thursdays from 10:00 to 10:30 a.m. over KFMB-TV, and from 1:00 to 1:15 p.m. on KFSD-TV. \(^{64}\)

Two factors were responsible for the large increase in the number of programs since the experimental programs in 1952-53, when fifty-four programs were produced:

1. A new station, KFSD-TV offered additional time to the schools.

2. The county schools prepared an excellent elementary series in science.

The 1953-54 schedule was set up so that the programs of interest to the secondary schools were telecast on Tuesdays, while Thursdays were reserved for the elementary schools.

Programs in elementary science, natural science, holiday observances, art, books, and reading, and zoo experiences were included in the elementary area, while the programs for the secondary schools included business and vocational education, guidance, local government, secondary science,

industrial arts, music appreciation, and community problem discussion.

An effort was made to try different techniques of presentation in both the elementary and secondary programs. Student participation was used wherever possible, and frequent use was made of local businessmen, government officials, and other resource specialists. The science series, for example, combined demonstrations and resource experts from the local scientific institutions. The zoo program used still photographs and film clips, in addition to the zoo personnel on the programs.

Study guides and teachers' manuals were sent out to the teachers by the county schools office. The material was favorably received, and was found quite helpful to the teachers using the series.

At the end of more than two years of experience in classroom telecasting, with over 400 television programs produced, the San Diego Public Schools set up six major recommendations to guide future work in the area of classroom telecasting:

1. That the program of working cooperatively with station KFMB-TV and station KFSD-TV be continued in 1954-55 on the same basis as it had been conducted during the other years.

2. That in programming for 1954-55, the following principles be observed:

   a. More programs for the elementary level with emphasis placed on pupil participation.

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65 R. H. Burgert, op. cit., p. 3.
b. Advanced planning be accompanied by more study guides and series outlines.

c. Time schedules be considered in terms of the most desirable hours for classroom viewing.

3. That one additional program producer be employed to relieve the load on the present producer, and to improve program quality and teaching materials developed.

4. That enough additional receivers and accessories be purchased to make it possible for all schools requesting a TV set to have one, it being understood that the sets be used for both school-produced and commercial or network programs of educational merit.

5. That advanced planning be done during the summer in program development, and the preparation of teaching guides and materials.

6. That during the school year 1954-55 a full-scale evaluation be made of the telecasts to the schools by the research department.

The Iowa State Department of Public Instruction. "Iowa TV Schooltime," the regularly scheduled telecasts to schools in Central Iowa, grew out of the experimental series produced during the fall of 1952. Telecast by station WOI-TV and presented in association with the Iowa Joint Committee on Educational Television which included the State University of Iowa, Iowa State College, Iowa State Teachers College, and the State Department of Public Instruction, "Iowa TV Schooltime" featured five series of classroom telecasts. They were viewed in the schools from January 5th through March 27th of 1953. The programs were telecast Monday through Friday at 10:00 to 10:30 a.m. and were designed to

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"stimulate the pupil audience, and to implement and reinforce the instruction of the local teachers." Study guides were made available to the teachers well in advance of the television programs. These guides listed the program titles and suggested materials and activities which would prove valuable to the teachers and pupils. The schedule provided during the early months of 1953 included five series, each consisting of twelve thirty-minute programs serving the following areas and grades:


These sixty programs offered to the Central Iowa Schools during the Winter Quarter of 1953 set a pattern for the continuation of "Iowa TV Schooltime." Programs provided later in the spring of 1953 retained the 10:00 to 10:30 viewing time, and several of the original series were continued.

"Iowa TV Schooltime" terminated its broadcasts for the 1952-53 school year at the end of May, 1953, having produced ten series of programs over a five month period. The programs had reached about 150 Central Iowa Schools.

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68 Ibid., p. 2.
69 Ibid., p. 3.
70 Iowa Joint Committee on Educational Television, Spring Bulletin, 1953, p. 3.
At the start of the 1953-54 school year, two new series were included in the schedule of "Iowa TV Schooltime." One, a full year course in "Health" at the junior high school level, was added in direct response to suggestions offered at a special TV Workshop held in Ames during June, 1953. This series replaced the music programs. The second new series, which dealt with social studies, replaced the guidance series. 71

Winter quarter programs were essentially the same as those broadcast during the fall of 1953, starting in January and continuing through the first week in March of 1954. All programs, days, and broadcast hours were kept constant.

Spring quarter saw the return of the high school guidance series, with ten programs devoted to helping the high school student better understand some of the problems he would encounter in school and in his first years of college. The series was telecast on Mondays, at the regular "TV Schooltime" hour of 10:00 to 10:30 a.m. 72 The social studies series, health series, science, and art series continued on the other days of the week.

At the end of the spring quarter it was estimated that the "Iowa TV Schooltime" series was reaching at least 200 schools within the WOI-TV viewing area. All of these schools

71 Iowa Joint Committee on Educational Television, 1953-54 Fall Bulletin, p. 2.
72 Iowa Joint Committee on Educational Television, Spring Bulletin, 1954, p. 3.
had television receivers. In addition, over eighty-nine other schools in the area indicated that students viewed programs regularly in nearby homes.\(^{73}\)

In the fall of 1954 "Iowa TV Schooltime" underwent a major change, with the primary emphasis being placed on programs for the primary and elementary levels. School people, meeting at TV Workshops stressed the fact that curriculum was most flexible at the primary and elementary levels, and would allow maximum adjustment to the offerings.

Five complete thirty-week series were scheduled to begin in the fall of 1954, with first programs broadcast during the week of October 4. The fall schedule of "Iowa TV Schooltime" was telecast Monday through Friday over WOI-TV from 10:00 to 10:30 a.m., with each series consisting of 30 programs. The following subject areas were served:\(^{74}\)

2. Iowa History. Elementary Grades.
5. The Primary Hour. Primary Grades.
   (Included reading, numbers, language arts, and communication skills).

Study guides containing helpful material for the classroom teacher were prepared for all "Iowa TV Schooltime"


\(^{74}\) Iowa Joint Committee on Educational TV, *Program Bulletin*, Fall, 1954, p. 3.
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programs, and were distributed to the teachers requesting
them for use with the series.

During the two calendar years from January 1953 to
December 1954, "Iowa TV Schooltime" presented over three
hundred classroom telecasts to the primary, elementary, and
high schools of Central Iowa. Surveys conducted by WOI-TV
indicate that by December 1954, the audience for these pro-
grams was well over 250 TV-equipped classrooms, with another
88 schools participating by means of viewing in nearby homes.
Roughly, 20,000 children are reached weekly by these tele-
casts.75 Emphasis has shifted from programs intended for
use in junior and senior high schools to more programs for
the primary and elementary grades, mainly because the curri-
culum of these grades is more flexible than that of the
higher grades, and because they present less scheduling
difficulties.

The Schenectady Public Schools. The first thirteen-
week series of "TV Schooltime", regularly scheduled tele-
vision school of the air in Schenectady, New York, began on
September 14, 1953, at 10:30 a.m. over station WRGB (TV).76
Television lessons were offered in the areas of beginning
French, elementary science, civics, news, and teen-age

75 James Davis, Iowa Joint Committee on Educational
TV, Results of TV Schooltime Survey, (Mimeographed report,
76 Mohawk-Hudson Council on Educational TV,
Schenectady, New York, (Personal Letter.)
problems on a three-day-a-week basis, with telecasts going to the schools on Monday, Wednesdays, and Fridays between 11:00 and 11:30 a.m. The television lessons were intended for grades ranging from primary through the high school. During the 1953-54 school year, the following areas were served:

3. Civics. Kindergarten, Grades 1, and 2.

The first series ended in December, 1953. The second series, starting in January 1954 and continuing during the remainder of the school year, saw a definite increase in the number of telecasts to the schools. Telecasts were scheduled over WRGB (TV) on Monday, Wednesday and Fridays from 10:30 a.m. to 11:00, and Tuesdays and Thursdays from 11:00 to 11:30 a.m. Lessons were offered to grade levels from primary to the secondary grades, and the curriculum areas included geography, history, vocational guidance, reading, music, language arts, current issues, and family life.

Study guides containing useful material for the classroom teacher were prepared for all of these programs and

77 Ibid.
were distributed to the classrooms. The areas served were distributed as follows:


"TV Schooltime" has met with much favorable comment from teachers and school administrators who feel that is has a valuable place in supplementing regular classroom work. The expanded offering worked satisfactorily for the remainder of the 1954 school year. Recommendations were made for continued development and refinement of "TV Schooltime" in the Schenectady area.

Summary. Regular classroom telecasting in the seven school systems considered stems from experimental telecasts which began in one case, as early as 1947. Of the seven producers of regularly scheduled school telecasts studied here, Philadelphia is undoubtedly the furthest advanced in terms of the number of programs produced, with a total production of thirteen school broadcasts a week, serving grades from primary up through high school. The Philadelphia schools telecast programs over the facilities of three commercial stations. Baltimore prepared and produced ten regular weekly series over three Baltimore television sta-
tions. Their offerings were intended for elementary and high school classes, with major emphasis on the former. A total of ninety programs were broadcast by the Baltimore schools during 1953-54, involving 3,010 persons in the production and preparation. Washington, D. C., produced five program series weekly serving only the elementary grades. In San Diego, California, the public schools produced 103 regularly scheduled telecasts for school use, of which thirty were for elementary classes, and 73 for the secondary schools. Iowa produced five half-hour programs a week during the 1953-54 school year, with four out of the five programs intended for the elementary grades. The remaining program was for junior high school consumption. The Schenectady Schools began the 1953 school year with three programs a week. This offering was later increased to five programs weekly in January of 1954. Programs were presented for kindergarten on through high school and adult audiences. Presenting short series of half-hour programs on a one-day-a-week basis, the Newark, New Jersey, Public Schools offered six series, involving thirty-six broadcasts, during the 1953-54 school year, serving elementary through high school grades.

Favored curriculum areas remain much the same as for the experimental telecasts, with music, science, art, and current events running most popular, and safety and health, guidance, mathematics, reading, and natural science being
found frequently. Subject areas which appear to be growing in usage are history, social studies, family living, guidance, and teen-age problems.

Of the seven school systems surveyed, five were using predominantly thirty-minute formats, and only two the fifteen minute form. Three of the seven used both lengths, with heaviest emphasis on the thirty-minute format. School telecasts noted here favored the morning hours, with five school systems telecasting in the mornings, and only two in the afternoons. Most of the seven used the period between 10:00 and 10:30 a.m., with some preferring 11:00 to 11:30. Some use both of these time periods. The afternoon periods used are from 1:00 to 1:30, 2:45 to 3:00, and 3:30 to 4:00 p.m.

All seven of the school systems studied here have continued their public relations type telecasts, which they used to interpret the work of the schools to the community. Classroom telecasts are aimed primarily at elementary and intermediate grades, although some series have been devised for the junior and senior high school levels. Programming for high schools involves scheduling problems, which frequently necessitate the repeating of programs and facilities for repeating of telecasts are not available to most of the schools currently involved in school telecasting. A lack of television recording facilities, and unavailability of time periods for such rebroadcasts over commercial stations has prevented extensive telecasting at the high school level.
Chapter Summary

This chapter has been concerned with a description of the development of broadcasts to classrooms in the United States. It has reviewed early experimental use of both radio and television in the schools, outlining the developmental pattern for each medium. It has shown how early experimental effort has led, in many instances, to successful regularly scheduled classroom broadcasts.

Certain similarities are apparent in the developmental pattern of radio and television as related to classroom use. Both radio and television school broadcasts began at the local station level, using the facilities of commercial stations. Each grew to regularly scheduled proportions as a result of experimental work, which began on a small scale. Both radio and television used the public relations type program as a stepping stone to classroom programs. In the case of each medium, classroom programming was developed primarily in the larger cities. Both radio and television were hailed as great potential assets for the teacher, and classroom broadcasts were regarded with suspicion by many as vehicles which would replace the teacher in the classroom, and which would reduce school children to automatons. Early subject matter presented by both radio and television was similar in some instances, with music, science, and current events being common denominator courses lending themselves to
effective presentation.

However, a comparison of the development of classroom broadcasts on radio and television shows a number of major differences. The experiments surveyed in this chapter have revealed that:

1. Experimental efforts in radio were mainly interested in junior high school and high school grades. This emphasis shifted to the elementary and primary grades after extended use of radio. In the case of television the emphasis was predominantly on broadcasts for the elementary grades, with a few program series intended for high school use.

2. National radio networks were instrumental in spreading the use of radio to the schools, with all four making efforts at school broadcasting. National TV networks have made no effort at school telecasting in this country as of September, 1955.

3. In radio, the outstanding "schools of the air" were, and still are broadcast over educational stations, which are owned and operated by universities, colleges or municipal school systems. At this writing just about all of the classroom telecasting done in this nation is done over the facilities of commercial television stations.

4. Several experimental classroom radio broadcasts were planned and produced by people who were staff members of commercial radio stations. The classroom telecasts studied here were all produced by educators working in cooperation with station people.

5. Many classroom radio broadcasts still originate from regional stations, and have the regional flavor and approach. Of the nine experimental telecasters, and the seven regularly scheduled telecasters studied, only WOI-TV in Iowa represents a regional approach. The others are local efforts, covering a city or municipal area.

6. The cities and localities which pioneered in radio broadcasts to schools have not been those which have pioneered in television.
7. Less research has been done in the experimental stage of radio school broadcasts than in the case of television. Educators have had an earlier concern with the values of classroom television than had those working with radio. Doubtless educators using television have also benefitted from the earlier research and experience of educators working with radio.
CHAPTER THREE

EVALUATION OF CLASSROOM BROADCASTING

Radio and television broadcasts to classrooms had quite similar beginnings, as chapter two has pointed out. Radio, the older brother of the two, spread slowly across the country, gradually gaining the acceptance of educators as a worthwhile, educational tool for classroom use. Its increased use in schools across the nation, and indeed, in major countries of the world, indicates that radio has a constructive part to play in classroom teaching, along with other supplementary aids like film, film strips, slides, pictures, recordings, and other visual aids. Classroom telecasting has grown somewhat more rapidly than radio. This is most likely due to the previous acceptance of radio by so many schools both here and abroad, and by its similarity in many respects to teaching films, which have gained widespread acceptance in the schools.

What value do classroom broadcasts have? What do teachers and pupils think of classroom broadcasts? What contributions do radio and television programs make to the learning situation in the classroom? Have educators made constructive efforts to appraise the use of classroom broadcasts? What have the appraisals shown? This chapter surveys some of the evaluative efforts made by the educators to indicate the...
extent to which evaluation has been carried on, and to point up the results of such investigations.

Evaluation of Radio in the Classroom

Educators promoting the rise of radio in the school classroom were conscious of the need for appraisal of the new teaching aid from its earlier days, although extensive research was not conducted during the experimental stages. Research efforts appraising the educational value of classroom radio broadcasts have been of three general types, according to Woelfel and Tyler.¹

1. Comparative studies of two groups of pupils, one which listens to the broadcasts, while the other does not.

2. Questionnaire studies of teachers' opinions concerning ways in which radio listening furthers the objectives of education.

3. Experimental studies of radio in schools and classrooms attempting to identify the more or less unique contributions radio can provide for curriculum content and methods.

Research studies of all three types have been conducted in educational centers of learning, mostly by those seeking master's and doctor's degrees in Education, to find out what values radio has as a classroom teaching device. Several studies of note were sponsored by educational foundations and special private grants and funds.

¹ Woelfel and Tyler, op. cit., p. 35.
An example of the comparative study was the Wisconsin Research Project in School Broadcasting, conducted at the University of Wisconsin by a research staff which worked from 1937 to 1939 carrying out investigations in the schools of Wisconsin. Wisconsin School of the Air programs were used in the appraisal. All details of the study were worked out with meticulous care. Programs were prepared in music, nature study, geography, social studies, English, and speech. A battery of tests to measure attitude changes, retention of ideas, and learning was drawn up for each series and given to students in a selected sampling of schools using the series and to an equal number of students in matched non-listening schools. Comparisons between the listening and non-listening groups were made and conclusions drawn. The Wisconsin studies indicate that the children who were "exposed" to classroom broadcasts did as well on the items on which they were tested as those who were taught by conventional methods. In addition, the Wisconsin Research Project in School Broadcasting conducted a study of the opinions of supervisors and teachers concerning the educational values of school broadcasts, using the questionnaire method to obtain information.

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2 University of Wisconsin Radio in the Classroom, Madison, Wis., (University of Wisconsin Press, 1942), pp. 1-7.
3 Ibid., pp. 193-195.
At Ohio State University, in Columbus, Ohio, where the Ohio School of the Air originated and still serves the schools of Ohio, a special Evaluation of School Broadcasts Project was carried on from 1937 to 1943, for the purpose of identifying and establishing the educational values of radio classroom broadcasts. Information was sought from teachers experienced in using radio in their classrooms, mostly by use of the questionnaire method. A number of different studies were conducted during the years from 1937 through 1942 by the evaluation staff.

Results of these studies and many others similar in nature which were carried out at educational institutions by master's and doctor's degree candidates and by special research groups brings out several interesting points concerning the value of radio broadcasts to schools.

1. Teachers who use school broadcasts seem to find them always helpful or generally helpful.

2. Educational changes can result from radio listening as well as from other classroom procedures.

3. Radio can provide genuine assistance in attaining of educational objectives in the classrooms. It contributes as follows:

   a. By providing background information.
   
   b. By developing appreciations and attitudes.
   
   c. By providing motivation and stimulation for further activity.
   
   d. By motivating the pupils to creative expression.
   
   e. By developing discriminating tastes within the listeners.
f. By developing certain skills and techniques.

From studies conducted to find the more specific contributions which radio can make in the classroom, in which teachers, supervisors, and administrators' opinions were asked by means of interviews and questionnaires, the following specific contributions were listed:

1. Radio can provide stimulus by presenting the voices and opinions of great men of the present and the past, by means of direct broadcasts of events, such as presidential speeches, etc.

2. Radio can bring immediate events directly to the classrooms as they occur.

3. Radio can recreate great events, and significant events by means of dramatization, in an attention holding, interesting and entertaining listening period.

4. Radio can serve as an in-service training device, bringing new ideas about teaching techniques to the teachers, right in the classroom.

5. Radio can add a variety of stimulative methods to the offerings of the classroom teacher.

Local areas where classroom broadcasting is carried on have done some descriptive-type studies seeking the opinions and reactions of the teachers, supervisors and pupils concerned. Typical reports from excerpts of such studies are these:

From the Portland, Oregon, Schools:

"The consensus of both teachers and supervisor that when radio broadcasts

\[\text{\cite{4}}\]

Irwin Stewart, op. cit., p. 92.
have been used to supplement the presentation of subject matter of a definite course of study, the results have been decidedly better than they were when presentation was made without radio."

From the Rochester, New York, Schools: 5

"Tests administered to seventh grade science students given to those who were using radio and to those not using it. The examination results showed that the radio group did as well, and slightly better than those taught by the traditional methods. Pupils' interest seemed to be stimulated to a greater extent in the radio groups."

From the Cleveland Schools, Cleveland, Ohio: 6

"Instruction by radio gives teachers and pupils listening to the broadcast the benefit of carefully selected material well organized and presented in an interesting, stimulating manner."

"Broadcasts serve as demonstration lessons without calling the teacher from the classrooms. It teaches children to concentrate... to follow directions quickly, and to answer quickly, briefly, and to the point."

"Tests given at the end of a semester on radio involving some of the most fundamental questions considered in the radio science lessons were answered by the children with good results. Thousands of children have learned many facts and principles and generalizations in science and can quickly give correct answers to questions involving these."

From the Philadelphia, Pennsylvania, Schools: 7

"The study of science in the Philadelphia Schools has been vitalized by the broadcast

5 Willey and Young, op. cit., p. 284.
6 Irwin Stewart, op. cit., p. 93.
The children have responded enthusiastically to the program, as evidenced by a significant volume of fan mail on the program, an increase of 89 per cent in the visits by children to the Franklin Institute since the program began in October of 1944, and a notable increase in the number of books on science taken from the Free Branch Library by children since the beginning of the programs.

These comments and results of studies by educators using radio are fairly typical of results in the various areas in the United States where school broadcasts are offered and used. These reports indicate that educators using radio feel school broadcasts have a definite service to offer teachers and pupils in the schools today, and that many school programs are offered which contribute significantly to the educative process in our schools. Surveys and studies conducted by educators have found that radio is an effective supplementary aid to the teacher; that it brings her material which she would otherwise not have available, keeps her aware of new teaching concepts and techniques, and stimulates her to further contacts outside the classroom. Both the Wisconsin and Ohio studies found that radio programs are an effective means of stimulating the students to new interests and further activities in school subjects, in adding to informational background, influencing attitudes and appreciations, and in aiding him in self-expression, and critical thinking. These, and other factors, have caused educators to grow yearly in their
appreciation for radio broadcasts to schools. This is reflected by the increasing number of FM radio stations owned and operated by educational systems across the nation.

**Evaluation of School Telecasts**

A few significant studies are available concerning classroom telecasts, and the use of television as a teaching tool. These studies have grown out of the experimental use of television in the school, and in other areas where it has been used as a teaching device. The studies considered in this chapter are of more than passing value, for they represent pioneering ventures in the use and evaluation of educational classroom telecasts. This collection of studies is intended to be representative rather than exhaustive, and has been compiled in the hope that the findings will be useful as a measuring device to educators contemplating the use of television in the classroom.

**Television Evaluation in Washington, D. C.**

**Hansen's Study, 1951.** In the spring of 1951, the Washington, D. C. Public Schools televised a series of eight elementary grades music lessons to the schools over station WNBW (TV) for the purpose of examining the practicability of the use of television in the classroom. Up to this time, no classroom telecasting had been done in the Washington, D. C. Schools, although radio had been extensively used. Carl F. Hansen, Associate Superintendent in Charge of Curriculum
Planning conducted the study. 8

The questions for which answers were sought in the study were:

1. Does it pay to teach music appreciation by means of TV?

2. Will pupils so taught learn more about music than if taught by regular classroom teaching only?

Hansen used a matched group study, in which two classes of twenty-two sixth grade pupils were matched for age, grade, sex, and I. Q. Each was taught a course in music appreciation, one group by television lessons, the other by conventional teaching only. Identical music knowledge tests were given both groups one week before and one week after the music lessons, in order to find out:

1. The way children behaved in respect to music.

2. Whether or not the children played musical instruments.

3. If the children had knowledge of great musicians.

4. If the children had knowledge of musical programs on radio and television.

In addition to the matched group study, Hansen solicited pupil and teacher opinion concerning the television programs.

Hansen found that the children did not learn more about music by television teaching than those who were taught by

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the conventional teaching methods. However, the television pupils did as well as the group taught by the classroom teacher. Hansen also found that the teachers and pupils who used the television programs were very enthusiastic about this new way of learning.

**Campbell's Study, 1952.** A similar study was conducted in 1952 by Mrs. Marjorie Campbell, a science teacher of the Department of Elementary Science, Division I, Washington, D. C. This represented the second series of telecasts to the classrooms of the Washington, D. C. Public Schools.

Campbell's study was designed specifically to discover if television could be used effectively to teach science to children of the upper elementary grades. She recorded the effects of a series of six television programs in general science which she produced over station WNEW-TV in Washington, D. C.

Campbell used a combination of questionnaire and observation of the activities of the children involved in her appraisal. She also solicited comments and questions from the children and their teachers. Twenty-eight elementary schools participated in the study, with teachers observing their children's reactions to the programs, and to the series, and reporting them by means of questionnaires.

On the basis of the analysis of questionnaire reports from twenty-eight teachers and the 4th, 5th, 6th grade

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children, Campbell concluded that elementary science could be taught effectively by means of television. She found also, that:

1. The six programs provided learning situations, stimulation and opportunity for application of learning:
   a. Many plans for follow-through activities showed that programs presented stimulation for further work.
   b. Correlation of social studies and science learnings showed application of science concepts.

2. Programs stimulated scientific attitude and scientific method of working on problems.

3. Programs provided enrichment and variety in the science curriculum.

4. Programs provided genuine enjoyment in learning.

Campbell also reported that the direct method of television presentation seemed to have more meaning and appeal for children than the simulated studio class.10

Hansen's Study, 1953. This study represented an appraisal of the first year of regularly scheduled telecasts to the Washington, D. C. Public Schools. In 1953, a follow-up evaluation report of newly developed television programs, along with the established science programs, was made by Carl F. Hansen. This evaluation included series in music, French, science, and Spanish. The programs were presented during the first semester of the 1953 school year, and were seen Tuesdays through Fridays at 10:30 a.m. over station

10 Marjorie Campbell, op. cit., p. 18.
Hansen used the questionnaire technique to obtain his information. Three hundred-three teachers from sixynine schools in Washington, D. C. cooperated in the study by returning questionnaires sent to them. A number of principals and supervisors added their criticism and answers to the survey.

Hansen reached the following conclusions as a result of the information he received in the survey:12

1. Teachers having used the television series considered TV lessons valuable enough to want them continued.

2. Teachers want to have television lessons related to the curriculum.

3. Soundness and variety of the follow-up activities reported by the teachers testified to the value of television teaching in all subject areas included.

4. Classroom teachers can adjust television teaching to individual differences in the classroom by adequately preparing her class for the lesson, by reviewing and re-teaching, and by encouraging follow-up activities.

5. Television teachers should make it possible for classrooms to take part in the TV program to a limited extent.

General comments of the teachers and supervisors showed that the television lessons stimulated a wide variety of study activities in the areas of science, music, Spanish,

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12 Ibid., p. 8.
and French, substantiating the two previous studies. They also indicated two possible weaknesses in the methods of television teaching used:

1. Learning by television might be passive.
2. Individual differences are not recognized in TV teaching.

Conclusions. As a result of experiments in telecasting to classrooms in the Washington, D. C. Public Schools over a four year period the school people concluded that television can be used effectively as a teaching aid in the classroom; that it is an effective method of stimulating additional learning and allied interests, and that teachers find television interesting and challenging enough to wish to continue using it. Hansen's and Campbell's studies recommend further research in the area of attitudes and interests of both teacher and pupils, as well as further research into the effectiveness of classroom television in other curriculum areas.

The three Washington, D. C. studies represent "stepping stone" type studies; research directed towards finding specific answers about given areas of television usage. They are of value for the generalizations which educators interested in classroom television may draw from them. Hansen's first study was adequately set up in terms of selection of sample and matching of the groups. The tests, according to Hansen were the weaker part of the study, but they yielded information which was fairly reliable. Campbell's study failed to
recognize that the children under observation had not previously seen classroom telecasts; a novelty factor must have been present. Campbell, in addition to doing the study, also produced the programs; some bias may be present as a result. The questionnaire sample was carefully selected, and of sufficient size to warrant accuracy. Hansen's follow-up study of 1953 was more carefully planned than his earlier one, using a different type of research technique, and a large sample. The information obtained in the reports can be given weight in proportion to the degree of objectivity practiced by the teachers involved.

Television Evaluation in San Diego, California.

The 1952 Study. The City Schools of San Diego, California, conducted their first appraisal of classroom television in the spring of 1952. The six week series of eighteen television programs telecast over KFMB-TV represented the first use of television in the San Diego Schools. The series was evaluated from the standpoint of both teacher and pupil reactions. Special programs were developed in curricular areas of science, industrial arts, homemaking, fine arts, news film, language arts, geography, government, safety, our heritage, and vocational education. The programs were aimed at the elementary grades, junior and senior high schools.

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The general purpose of the 1952 evaluation was to find out how teachers and pupils were responding to classroom television programs, how much measurable learning resulted from direct television instruction, and whether any economies resulted.¹⁴

The questionnaire method was used in the study. Over 200 questionnaires were mailed to teachers in the city schools. Responses were received from 178 teachers who had used the programs in their classes. The teacher evaluation was purely on a voluntary basis. Questionnaires requested information concerning the effectiveness of the programs, and evaluation of the program production and content.

Three-fourths of the 178 teachers felt that the overall interest of the pupils was "good" or "excellent." Considering television as a teaching aid, 33 per cent said that television was "excellent", 25 per cent "good", 16 per cent "fair", 5 per cent "average", and the remainder failed to answer. Teachers rated television in about the same manner as a means of curriculum enrichment.¹⁵ Almost all of the 178 teachers rated television as an "excellent" or "good" means of motivating children.

Over two-thirds of the 178 teachers rated the ability of television to disseminate teaching materials otherwise not available as either "excellent" or "good", and the

¹⁵ Ibid., pp. 11-15.
majority considered the programs as "excellent" or "good" as in-service training devices.

Wherever opinion was expressed by the teachers, the positive comments outnumbered the negative reactions by a ratio of about twenty to one.

**The State College Study, 1952.** In conjunction with the 1952 study, three graduate students working in cooperation with the Education Department of San Diego College and the Research Department of the San Diego City Schools conducted a study to determine:

1. The value of television as an enrichment factor in the instructional program of the San Diego City Schools.

2. The attitude development of pupils, and pupils gains in factual information.16

The students used subjective teacher evaluations and statistical data in the studies, with information being collected by means of questionnaires, and actual teacher interviews. The sample was kept to twenty-five teachers because only three men were available for the interviewing. One hundred teachers were sent questionnaires, of which sixty-eight were returned.

As in previous studies, the State College study found that teachers favored television as a supplementary teaching aid, and that it provided motivation for further study and research, as well as stimulation for further activity in

the areas of study. The study found that television was an excellent in-service training device for teachers, enabling them to observe new teaching techniques and new materials right in the classroom. It found that children can learn equally well with television as with standard techniques. Children using the television lessons spent more time in follow-up activities than those taught by standard methods. One interesting new finding was observed in this study: Teachers using television lessons spent less time in preparation to get equal test scores from pupils than those teachers who used only the traditional methods and materials.17

The study recommended that television experimentation continue in the San Diego area over existing stations in the area.

The 1953-54 Television Study. During the 1953-54 school year a third study of classroom television was conducted in the San Diego City Schools. The purpose of this study was to find out from teachers and pupils the acceptability of programs produced for the classrooms in order to remedy defects which the programs contained.18

The questionnaire method was employed in this study. Questionnaires were sent to forty schools in April of 1954 by the Research Department of the San Diego City Schools.

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17 Robert H. Burgert, op. cit., p. 17.
The questionnaire requested the aid of the school principals in getting the answers to specific questions concerning the content, production and reaction to the classroom telecasts being presented. Principals were to work with the teachers using the programs, and ask the questions of them. Thirty-eight replies were returned.\(^{19}\)

Results of the study indicated that the number of programs viewed by the schools ranged from a few to all of them, and the three types of programs deemed most helpful were those in physical science, life science, and simulated classroom.\(^{20}\) Teachers felt that their children developed better work habits after seeing other students working on the programs. Teachers comments indicated that children showed great interest in the programs, remembered the materials presented on television, did more reading, and research, took more field trips, and discussed problems actively.\(^{21}\)

**Conclusions.** All of the San Diego City Schools research projects utilized the descriptive type of study to secure information. Questionnaires were relied upon, along with some controlled-experiment type studies, and opinions and comments were secured from teachers, principals and supervisors. The studies were conducted by those who were presenting the programs in order to learn the reactions of the users, and the effects of the programs, much the same

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19 Ibid., p. 6.
21 Ibid., p. 9.
as in the case of Washington, D. C. The results of the studies tend to agree with the findings from Washington, D. C. If the teachers reported their opinions and reactions honestly and objectively, the information obtained is certainly of value. Reports of the methodology used in the graduate student's study were not available in detail: intelligent appraisal of the technique used is not possible.

Television Evaluation in Iowa

Becker's Study, 1953-54. In conjunction with "Iowa TV Schooltime", presented over station WOI-TV in Ames, Iowa, Sam L. Becker, Instructor, Department of Speech and Television Center at the State University of Iowa conducted a study of one series of classroom telecasts during the 1953-54 school year.  

School telecasts had been scheduled regularly to Iowa Schools since 1952. The series evaluated was "Adventures in Art", a half-hour program designed for the elementary grades, and telecast Fridays at 10:00 a.m.

The purpose of the evaluation was to find out teacher and pupil reaction to the art series, and to determine the effectiveness of the series as a teaching tool. Like the Washington, D. C. and San Diego studies, Becker's study was interested in teacher-pupil reactions to the programs' content, production, and general effectiveness in the classrooms.

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Becker used the questionnaire method to gain his information. He sent questionnaires to 150 teachers using the TV series. Questionnaires requested information concerning the effectiveness of the programs, the content, student reactions to various elements of the programs, and of the television production techniques used. Thirty-five percent of the questionnaires were completed and returned.

Becker found, as did the Washington and San Diego studies, that teachers and pupils alike were enthusiastic about television in the classroom. Teachers felt that the series in art was very useful to them personally as a means of in-service training. Most of the teachers indicated that many special projects in art resulted from the TV series, showing again, that television has a high motivational and stimulative effect on the students. The series stimulated a high degree of learning more about art in the case of the upper elementary grades (fifth through eighth). Teachers in the upper and middle elementary grades felt that the television art course supplemented regular work in the classroom very well, while teachers in the lower elementary grades were least favorable. Teachers felt that the guidebook provided for the series was very useful. 23

Becker made these recommendations:

1. In art programs there must be an emphasis on doing things: demonstrations are necessary.

23 Sam L. Becker, op. cit., p. 6.
2. More art programs are needed for the lower primary grades.

3. The study guides for a series should state explicitly what grade level the programs are intended to serve.

**Oesterling's Study, 1953.** Robert D. Oesterling, a graduate student at the State University of Iowa conducted, a study of pupil reaction to a series of guidance telecasts for junior high school viewing. The study was done during October, November, and December of 1953. Its purpose was to determine junior high school reactions to the ten-week series presented by WOI-TV.²⁴

Oesterling, like Becker, used the questionnaire method to obtain information. Sixth, seventh, and eighth grade pupils were studied in fourteen schools using the television series. Oesterling selected his schools by means of a random sampling method from among those which had earlier indicated they were using the programs. Six hundred-twenty-two questionnaires were mailed to these schools, of which 468 were returned completed and usable.

The majority of the junior high school students liked very much to see other children their age on the programs. The programs showed a high degree of motivational effect, with 80 per cent of the 468 children stating they had classroom discussions about the program afterward. Over 25 per cent said they talked about the programs with their parents.

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and 73 per cent said they discussed them with their fellow students outside of class. Almost all of the students said that they were presently doing something they learned as a result of the television series.25

The reactions to these programs, along with the analysis of the programs lend support to these conclusions which Oesterling drew:

1. A program moderator who can present material at the proper grade level in an interesting fashion and who has a sense of humor is needed on telecasts for junior high school.

2. Children who are the same age as the student viewers, should be used on classroom telecasts when it is possible.

Conclusions. The methodology used by Oesterling was sound, and the findings are interesting, although not startling. The questionnaire method was used exclusively in securing the information. The sample was carefully selected, and of sufficient size to provide reliable information. Becker's information was based on completed questionnaires returned by less than fifty Iowa teachers using the art programs. Multiple choice questions were used on most of the questionnaires, and the number of possible answers was rather limited. This tended to limit the possible answers a teacher could give. The study is of interest for the observations and recommendations made by Becker on the strength of the teacher's answers, and for the fact that

it was limited to only one area of instruction, that of art, as were the studies done by Campbell in Washington, D. C., and Oesterling. Their findings tend to lend support to one another.


**Program Evaluation Reports.** School classrooms in Philadelphia have been receiving regularly scheduled telecasts since 1951. As was pointed out in the preceding chapter, the Philadelphia Public Schools System perhaps uses more television programs than any other in the nation.

The School Community Relations Office, and the Television Production Staff plan and devise evaluation for the programs sent to the schools. This group is vitally interested in getting first-hand information concerning the TV programs telecast to the school classrooms. Their research efforts are carried on in order to determine pupil-teacher reaction to the programs, the number of children viewing, reception quality, the degree of pupil interest, follow-up activities, and general criticisms or suggestions.

To obtain this information, the staff has been using the written report method. At the start of each new series of telecasts, program evaluation forms are sent to the teachers using the television programs along with the teacher's manuals and guide sheets. These forms are returned weekly to the School Community Relations Office, where they are read and analyzed by the TV Production Staff, and the
Curriculum Committees. 26

During the five years the Philadelphia Public Schools have been telecasting, thousands of these evaluation reports have been completed by administrators, teachers, principals, and pupils. 27

The Philadelphia Staff has found, as have others mentioned in this chapter, that television serves admirably as a classroom aid to the teacher. Some of the specific findings, and conclusions which the staff has drawn on the basis of the thousands of evaluation reports submitted over the years are these:

1. Pupils remember with amazing accuracy what they see and hear on television.

2. Pupils are interested in learning the spelling, meaning, and pronunciation of new words used.

3. Children are stimulated to search out stories and reading material about television subjects.

4. Supervisors report that it takes less time for ideas and techniques to become used in many classrooms as a result of television programs.

5. Teachers report in some cases that children in grades one to three respond better to a fifteen-minute program than to longer ones. However, there are more requests for "more time" on the evaluation of fifteen-minute programs than there are for "less time" on those of thirty-minute duration.

27 Ibid., p. 19.
6. Teachers and principals who teach the "slow learners" report that such pupils acquire through television some of the facts and skills which they cannot learn through reading, and which they are not interested in acquiring through other avenues.

The information sought by the evaluation reports is of the type which helps the TV Department bring better programs to the schools. Honest, frank opinions are solicited. Teachers do not sign the forms, nor must they fill them out.\textsuperscript{28}

This system of evaluation has certain weaknesses. There is a tendency to receive many reports from the conscientious teachers, and only a few or none from the others. There is the danger that the weekly report becomes another chore which is dispensed with quickly and without much reflection or conscience. Teachers could report what they think administrators want to have reported, rather than the actual facts. The six items quoted above represent results of reports made by teachers who regularly use TV programs in their classrooms. The reports, in turn, have been analyzed and consolidated by those who produce the telecasts. They represent the observations made by educators after five years of continuing classroom television programming. The degree of significance of these findings must depend upon the degree of objectivity present in those who reported the findings.

\textsuperscript{28} Philadelphia Public Schools, \textit{op. cit.}, p. 20.
Television Evaluation in Great Britain.

Pilot Experiment, 1952. In Great Britain, a pilot experiment with classroom television was conducted in 1952 jointly by the British Broadcasting Corporation and the School Broadcasting Council for the United Kingdom. It involved twenty programs dealing with science, geography, current affairs, and industry, aimed at two age levels: 11 to 13, and 13 to 15 years.

The purpose of the study was two-fold:

1. To investigate questions of television techniques in relation to the tasks which a service of TV Broadcasts to Schools might be expected to perform, and

2. To set up a public experiment in which it was hoped that all local educational authorities within coverage area of the School Broadcasting Service would share by equipping a number of schools with sets to get the programs.

Twenty programs were broadcast to six schools maintained by the Middlesex Educational Authority, in the county of Middlesex. Each program was of twenty to thirty minutes duration, and each was planned as a separate unit, grouped into five loosely knit series covering the areas mentioned. 29

The programs were appraised by two man evaluation teams supplied by the TV Broadcasting Service. These teams were present in each of the six classrooms participating, to observe the reactions of the pupils to the program content,

production techniques, the personalities used on the programs, and the general effectiveness of the programs. The observer teams noted the reactions of the children and the teachers to the programs, and after the telecasts questioned both to get further information. In addition, the children submitted written work over the material covered on each telecast to provide the teams with their objective reactions to the programs. Comments of the teachers and pupils concerning production methods, characterization, effectiveness of presentation, etc., were solicited from the groups. No questionnaires were used. In addition to these observations, team members solicited comments of teachers, supervisors, and the students.  

Viewers' reactions generally indicated that the programs were interesting and stimulating. The programs held the interest and attention of the viewers very well, even after the novelty factor wore off. Children and teachers reactions to the programs left no doubt of the need for high standards of production and performance in school telecasting.  

Criticism of presentation techniques indicated that studio dramatization, while good in other types of programs is often risky for young groups, for confusion may result. Studio demonstration technique was considered very effective, and studio discussion method was promising, although

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30 Ibid., p. 6.
31 Ibid., p. 7.
it ran the risk of oversimplification of the issues in order to stay within time quotas. The straight talk, or direct teaching program was most effective, although programs using this technique seemed too long by about five to seven minutes.\footnote{32 School Broadcasting Council, \textit{op. cit.}, p. 9.}

Generally, the series was successful, and tended to confirm the premise on which the programs were planned, that in all of the five fields, television was very likely to have a contribution of value to offer the schools. The experiment offered considerable encouragement for the belief that television at its best has qualities of warmth and informality to offset the greater technical finish of teaching films.

This was a pilot experiment, since no school telecasts had been tried in Great Britain prior to 1952. As such, it had considerable value to the School Broadcasting Council, for it gave members of the council specific information which they sought. The methodology was carefully worked out, the sample well selected, and the entire project was competently planned and organized for a pilot project. However, certain shortcomings appear in the study. Undoubtedly the novelty factor entered the picture, for none of the schools participating had ever used television before. Teachers and pupils were not accustomed to having observers in the classroom. Classes might have been conducted differently had the evalu-
tion teams and additional viewers not been present. The quality of the programs also varied, since different teachers were tried in the various areas, and some, quite naturally, were better than others. The different programs as presented, lacked unity. On the other hand the study was one in which interest was taken in presentational techniques; the first of its kind surveyed. As such, it provides interesting new material. Other findings reported substantiate those of studies already examined.

Television Evaluation In Canada.

Pilot Experiment, 1954. The National Advisory Council on School Broadcasting in Canada decided in 1952 that a pilot experiment in school telecasting similar to the one in Great Britain would be wise for Canada. No school telecasts had been attempted up to that date, although radio had been used extensively in Canadian schools. The council set up a special television committee to plan the proposed experiment, the purpose of which would be to determine whether, and to what extent, television could help the teacher in her daily classroom work.33

Once the plans were ready, the council asked the Canada Broadcasting Corporation to provide facilities for carrying them out. By February of 1954 the Council was told by the

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CBC that all facilities would be made available, with telecasts being produced by the TV service of the CBC under the director of Television CBLT, Toronto.\footnote{34}{Canadian Broadcasting Corporation, \textit{op. cit.}, p. 9.}

It was decided to make the programs available to all parts of Canada able to see them. Since Canada's micro-wave relay system only connected stations in southern Ontario and Quebec, it was necessary to make kinescope films of each program, in order to extend the service to all of the TV areas in Canada. The choice of subjects of the telecasts were based on curriculum of Ontario only. Actual broadcasts of the programs began in November of 1954.\footnote{35}{\textit{Ibid.}, p. 14.}

The broadcasts carried the following subject areas: safety, art, history, arithmetic, geography, conservation, and current events. There were only eight thirty-minute programs in the experimental series; four to the fifth and sixth grades, and four for use of the seventh and eighth grades. Teachers' manuals were sent to teachers using the programs. The formats prepared for each of the programs emphasized the experimental nature of the series. They provided for use of different techniques, from the master teacher, narrator demonstrator, narrator and guests, full dramatization, combined narrator and demonstration, and actuality techniques.
To evaluate the effectiveness of programs, the questionnaire method was used, the questionnaire covering various aspects of content, production, and presentation. Information from the questionnaires was supplemented by opinion gathered from correspondence and in discussion with educational officials, and from visits of the School Broadcasts Department Personnel to many Canadian schools.

Five hundred-thirteen teachers from 205 schools returned a total of 2,425 evaluation forms.\(^\text{36}\)

The pilot experiment received plenty of constructive criticism from teachers and educational critics in Canada. The results indicated that television programs, jointly produced and planned by teachers and broadcasters have a definite contribution to make as a teaching aid in the schools. Further experimentation will be required to clarify the exact extent of this contribution.\(^\text{37}\) Teachers and pupils were enthusiastic about the telecasts, and found them useful in their classroom work.

The National Advisory Council recommended at the end of the series that further experimentation into the classroom use of TV be undertaken by the CBC in cooperation with the National Advisory Council on Schoolbroadcasting. Experimentation was to aim at clarifying the nature and extent of the contribution to be made by television in the classroom.\(^\text{38}\)

\(^{36}\) Canadian Broadcasting Corporation, op. cit., p. 50.
\(^{37}\) Loc. cit.
\(^{38}\) Ibid., p. 52.
Television Evaluation in New Jersey.

The Montclair Study, 1953-54. Montclair State Teachers College presented to the Fund for the Advancement of Education a proposal for a five-year study that would cost about a million and a half dollars. The offer was made in the fall of 1953. The study was to be called, "A Study of the Effectiveness of Television in Relation to the Current Problems in Teaching." Over the five-year period suggested, the college was to undertake to formulate and test certain basic principles relating to the impact of television in twelve impact areas, including: the pupils, the teachers, methods of teacher education, school administration, the community, the curriculum, school architecture, educational television equipment and educational television production.39

A small preliminary grant was made by the Fund Officials to enable the researchers to define the field and scope of the study, while awaiting approval of the project. Under this grant, Dr. George Kelly, the project director, and Prof. Lawrence Conrad, his assistant, decided to explore first, "The educational feasibility of televising the outstanding teacher under conditions which simulate her normal classroom setting, and teaching units of instruction that form a part of the school curriculum."40 The study is

40 Ibid., p. 1.
described by the project director as follows:

"In the last week of May and the first week of June, 1954 there was broadcast from station WRTV in Asbury Park, New Jersey, over UHF Channel 58, a daily series of lessons designed for the fifth grade, and geared to the social studies unit of work that would normally have been covered during those weeks in the schools. The lessons were received in thirteen classrooms in Long Branch and Red Bank, New Jersey, for these classrooms adapted to the ultra-high frequency impulses of Channel 58.

The broadcasts were made at ten o'clock in the morning, and were of thirty minutes duration. Though only thirteen classrooms were involved, and thirteen "regular" fifth or sixth grade classes, fifteen teachers in those school grades. So there are fifteen teachers who are qualified to speak on the questions that are constantly raised concerning classroom lessons brought in day after day by means of television.

There were nine lessons in all, and these lessons were prepared and produced at the New Jersey State Teachers College at Montclair, where as an experiment in one of the educational uses of TV a group of six outstanding fifth grade teachers was enlisted to serve for two months in studying the curriculum, organizing a unit, preparing a prospectus, and designing the nine lessons in great detail. These six teachers then proceeded, among them, to teach the nine lessons before the TV cameras in the studios of the Montclair TV in Education Project. The nine lessons were recorded as "kinescopes" and so made available for later use."

The fifteen classroom teachers cooperating in the study filled out and sent in to the project daily reports concerning the effectiveness of the television lessons; in all, about 130 such reports were received - nearly one from each classroom.

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41 Ibid., pp. 15-16.
cooperating teacher covering each day's broadcast. In addition, 400 questionnaires were drawn up especially for the pupils in the classrooms to answer. Three hundred eight were returned in usable condition, containing over ten thousand possible items to be tabulated.

Some of the broader, more general findings were:

1. Television may be used not only for introducing educational specialties and occasional lessons into the classroom, but for teaching purposes day after day.

2. The television lesson will seldom carry the whole burden of instruction in a given unit of work, or even in a given lesson. The classroom teacher is not replaced by it, but her time and talents may be redistributed.

3. In the presentation of certain types of material, television is definitely a superior teaching method.

4. Television is not necessarily a "one way" medium. Skillful teachers are able to develop a good deal of inter-communication with the class.

5. Lessons employing television constitute richer experiences than are regularly attainable in the various departments of school work.

6. Children do not ask for excitement or glamor in their school television lessons. They like best the ones from which they learn most.

7. A television lesson in the classroom gives the pupils all the advantage of contact with a new teacher-personality, without having to give up the old one.

8. Pupils like best those television teachers who are most nearly like their regular teachers,

42 Kelly and Conrad, op. cit., pp. 27-29.
and to care least for the ones who do not seem like any teacher they ever had.

9. Good teachers need very little instruction before going before the cameras. They need mostly to know how the camera works and what it can do. This is something they can learn in a few hours' time.

The Gross Feasibility Study, 1954. Several "side" or "baseline" studies were conducted in conjunction with the above reported study. The Gross Feasibility Study was conducted to find the answer to the question: "Will teachers who are selected solely because of their superior performance in the classroom teach successfully in the studio, or does television require a special talent?"

The study, like the other, was not a controlled experiment, but of the exploratory type. The evaluation was based upon the experiences of the production staffs, the teachers who prepared the series, the daily reports from the fifteen teachers using the courses, reports of the pupils, letters from interested supervisors and visitors, and the group discussions between classroom and televised teachers at the end of the series. 43

In abbreviated form, the primary and secondary conclusions of the Gross Feasibility Study are stated below. 44

1. It is feasible to use outstanding classroom teachers as talent in educational television produced for classroom use, but this conclusion implies certain conditions: a. The TV teacher should be genuinely outstanding in his own face-to-face classroom work.

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44 Ibid., pp. 40-50.
b. He should ordinarily not be too remote from his own classroom or pupils.
c. Outstanding classroom teachers are likely to be effective in educational television only if they recognize the cooperative role of the teacher in the classroom where the lesson is being received.
d. The exploitation of the superior teacher's abilities on TV is a complex production problem which requires educational insight both in the production staff and in the studio staff.

2. Classroom use appears to have much to do with pupils' selection of objects and actions which they consider to be most interesting.

3. There is a very great range of interest in what is presented even at a single grade stratum.

4. Demonstration of practical use and the showing of live children seemed to be the general factors which tended to account for choices of interesting items.

5. The basic ideas pupils select from televised lessons seem to be affected very little by individual classroom teachers.

6. Pupils claimed to have learned the most in topical areas where they judged the corresponding ideas to be important.

7. Teachers generally agreed that the educational objectives were clearly apparent in all the televised lessons and that the objectives were successfully attained by the televised teachers.

8. The viewing teachers found the televised teachers highly acceptable as professional colleagues and as persons.

Conclusions. These are some of the early conclusions and results of the Television in Education Project set up to study the effectiveness of television in relation to the current problems in teaching. The methods used in the Montclair studies were carefully organized and well planned
by a competent research staff. The studies represent exploratory efforts which were to have paved the way for more detailed and more carefully controlled appraisals. The programs were designed for classroom use, but primarily to serve as a basis for research, and to determine the major problems encountered in television teaching. In this respect these studies differ from those of Philadelphia, Washington, and Iowa, where the emphasis of the programs was supplementary aid to the classroom teacher first, and evaluation second. The findings are pertinent, and of value to educators involved in school broadcasting. The $1,500,000 grant was not made, and the project was abandoned.

**Television as an Adult Teaching Tool**

The studies surveyed thus far have been concerned with the use of television in the school classroom, most frequently for the use of pupils in the elementary and junior high school grades. These studies have indicated that teachers found television useful as a supplementary aid, helpful as an in-service teacher training device, useful as a method of stimulating and motivating children to further activity and study in the subject areas taught by television.

How effective is television as a teaching tool when used in place of the classroom teacher, rather than merely supplementing her efforts? Several pertinent studies have examined television in this role.

This study was done by Fordham University psychologists for the Navy Special Devices Center to find the answer to this question: "Can Television be used effectively to teach Naval Reservists?"

In the study, teaching by means of television was compared with teaching by other media, namely television recordings, and conventional classroom procedure.\(^5\)

The controlled-experiment method was used, with matched groups of Naval reservists as subjects. Approximately 700 Naval reservists at nine centers throughout the United States were taught identical material. Officer pilots were given a course involving navigational and tactical problems, and the enlisted men were taught a course dealing with jet engines and maintainance.

At three centers in the Eastern United States, Naval reservists watched live television programs broadcast from the Special Devices Center over a special network which was set up by the National Broadcasting Company. At three centers between Chicago and Dallas, Texas, trainees saw television recordings of the same television programs presented by means of kinescope film. In three places in the Great

Lakes Area, the courses were given by "live" teachers appearing in person, and using conventional classroom methods, with instructors following the same lesson plans used by the television programs.46

The group of enlisted men were at about the same stage of basic training, and all of the officers were on active flying status. The differences between the two groups before the lessons began were very slight; they were compensated for by use of statistical methods. All groups were allowed the same amount of time for instruction. All trainees were tested immediately before and after each training session. In all cases a local training officer was on hand to answer questions, and clear up problems.

Comments were solicited from the trainees, evaluation project staff members, and Naval Officers.

The study demonstrated that instruction by television was as effective as, or more effective than local instruction in 80 per cent of the cases tested. Both officers and enlisted men overwhelmingly voted television at least the equal of local teaching, and many preferred it. In 75 per cent of the cases television recordings on film proved as effective as, or more effective than, local instruction. In 84 per cent of the cases television recordings on film proved as effective as live television.47

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46 Rock, Duva and Murray, op. cit., p. 8.
47 Rock, Duva, and Murray, op. cit., pp. 15-17.
Concerning program material, and its effectiveness, narrative material was found to be better remembered than other kinds. Straight narration was better remembered than narration combined with drama. Direct narration plus film animation was found to be most effective.

The Navy study throws interesting light on the question, "Is TV an effective teaching tool?" Its "Yes" answer in the case of Naval reservists is a positive one, backed by capable investigators, using reliable research techniques under better than average conditions of control. Unfortunately, the same instructors could not present both the television and the face-to-face courses, although identical course outlines were used. Some variation could result from this factor. The study was well organized and capably executed. The results are of considerable significance.

Special Devices Center, U. S. Navy, 2nd Study. This study was also conducted by Fordham University psychologists for the United States Navy. The questions for which answers were sought in the study were:

1. Can television be used effectively to teach Army reservists?

2. Do men remember what they learn by television?

3. What are the best methods for teaching by TV?

In order to answer these questions, eight one-hour lessons in Command Training were telecast at weekly intervals over a special CBS Network to more than 3000 Army Field Force Reservists in 160 viewing groups. Reservist groups were located in Boston, Mass., Philadelphia, Pa., New York City, N. Y., Baltimore, Md., Washington, D. C., Syracuse, N. Y., and Cleveland, Columbus, and Cincinnati, in Ohio. All reservists who saw the television programs were tested immediately before and after each television lesson. The tests were designed to find out not only how much the men learned from the lessons they had seen, but also the amount they retained from previous lessons. Test scores were analyzed statistically, and the amount of success in answering separate questions was studied in relation to the teaching method used in the telecasts.\(^{49}\)

The investigators' conclusions, based on this study were that television is a good teaching device. All grades of officers and enlisted men made higher scores on the test questions after the telecasts than they did prior to the telecasts. The same material proved to be effective in accomplishing learning, whether the material was given to field or company grade officers to sergeants, or to other enlisted men. The men remembered a substantial amount of the material when they were tested again one to six weeks after the course. The reservists compared the television course

\(^{49}\) Rock, Duva, and Murray, \#2, op. cit., p. 3.
very favorably with other reserve training, and a majority thought it was better than the average training film.\(^{50}\)

Concerning effective teaching procedures on television, the most effective teaching procedures include straight narration, and narration combined with some other form of teaching. Narration plus meaningful film, and narration combined with drama seemed most effective. Most learning seemed to occur when the visual presentation supplemented the meaning of the narrative.\(^{51}\)

The Army Reservist Study lends strength to the findings of the earlier Naval Study, supporting the conclusions that television is an effective teaching tool. Most significant is the finding that the men retained what they learned; for learning by any means is of little value without retention. Like the earlier study, this one presents evidence that most of the reservists preferred to learn by television. Undoubtedly, a novelty factor was present in this regard, for which allowance must be made. The findings concerning presentational methods tend to support those of the earlier study: narration when backed by meaningful film is very effective in television teaching. All evidence available indicates that the study was capably organized and executed by a well trained research team.

\(^{50}\) Ibid., pp. 11-14.  
\(^{51}\) Ibid., pp. 17-18.
Quartermaster School Study, 1954. A third armed services study was done in 1954 by Army Quartermaster personnel in cooperation with the University of Houston and station KÜHT-TV. Researchers were interested in finding out whether a short program of instruction through television would be as effective with, and as acceptable to, ROTC Quartermaster students at the university as was classroom teaching.  

A matched group, controlled type study was used to obtain the information. One hundred and seven ROTC students were used, with forty-seven in the group who received instruction by television only, and sixty in the group that received instruction by the regular classroom method. Instruction for both groups was over identical Quartermaster Corps material. No tests were given the students prior to the lessons, but all of the students in both groups were tested at the conclusion of the four week course.

The television teaching resulted in approximately as high examination scores with the television only as with the classroom group. The majority of the ROTC students felt that television instruction was at least as good as the classroom instruction, and they would prefer the television instruction.  

This study offers further proof that television is an effective teaching tool. One difference between this study and those done for the Navy is that fact that the groups were not as exactly matched, and this study was done on a low cost basis. Allowing for the groups being slightly different as far as matching is concerned, the study still points out that the groups did almost equally well on the material covered. The fact that the men preferred the television instruction might have been due in part, to novelty, to the prestige television carries as a new medium of communication, or to unimaginative teaching on the part of the ROTC staff prior to the television experiment.

Television in Army Training Study, 1954. This was a carefully designed study, similar in nature to the ROTC study, conducted by the Human Resources Research Office of the George Washington University. It was done to find out whether television could be used effectively to replace some of the face-to-face teaching of Army basic training.\(^{54}\)

Fourteen hours of basic training materials were selected, and parallel television instruction and face-to-face class material was prepared. Identical instructors were used for the television and the standard classroom instruction. Approximately 12,000 basic trainees were tested as part of

the study, taking achievement tests immediately after the instruction, and again one month after the conclusion of the lessons.

Under the matched conditions, it was found that television instruction proved at least as effective as regular instruction. In the case of lower-aptitude groups, television instruction was found to be more effective than standard classroom procedure. The men retained the material when learned by television, as well as those who had received their learning by classroom methods. The researchers concluded that "Should conditions require the Army to adopt a mass medium of instruction such as television, instruction of the types used in this study could be presented by television with the strong assurance that there would be no loss in learning effectiveness." 55

The study substantiates the findings of the Navy and Quartermaster study. It is interesting also, that lower-aptitude groups were helped to such a significant extent by television teaching. The study lends support to the findings of the Army reservist study, that men retain TV taught material as well as classroom taught material.

The University of Houston Study, 1954. Three University of Houston psychologists in 1954 studied the effectiveness of an elementary psychology course and an elementary biology course which was offered on the educational station, KUHT-TV.

55 Ibid., p. 1.
Their purpose was to find out whether the courses were as effective when taught by TV as when taught by traditional classroom methods.\footnote{56}

In the first section of the study the psychologists compared the final examination scores of 96 students enrolled in a campus lecture section of elementary psychology, with the scores of seventeen students enrolled in a TV-lecture-only section, and thirty enrolled in a television-plus-campus-discussion series. Due to the small numbers of subjects involved it was impossible to match the groups completely for age, intelligence, previous courses, etc. In the section dealing with biology, the mid-semester examination grades of two groups of 78 subjects were compared. They previously were matched for college class, grades, and sex. One group had taken the course in the classroom, the other had viewed the lectures only on TV and had met on campus for two discussion periods a week. The same professor lectured to both groups.

In the case of the psychology course, no significant differences were found in the average scores of the three groups tested. The TV-only group scored slightly higher than the non-TV group, and the TV-plus-discussion group scored even higher. It was assumed that the psychology

\footnote{56 NAEB Educational Television Research Fact Sheet, \textit{An Evaluation of the Effectiveness of Instruction and Audience Reaction to Programming on ETV}. University of Houston, 1954., p. 1.}
course was as effective when taught by TV as when taught in the conventional manner.

The results were quite similar for the biology course. The average examination grade for the non-television group was slightly higher than for the television group, but not significantly so. It was assumed that this course worked just as effectively when the lectures were given by television as when given in the traditional classroom manner.\footnote{\textit{NAEB Research Fact Sheet}, \textit{op. cit.}, p. 1.}

Actually, this study accomplished approximately the same thing with non-military subjects as those previously examined using Army or Navy personnel. It points out again, that television can be used for teaching with good results. Both studies examined were well planned and carefully carried out by competent research people. In the biology course, one factor might have helped those taking the TV course: the fact that they met on the campus twice weekly for discussion periods in the subject matter. Actually, their learning was not purely by television, since the discussions could have influenced their learning considerably. Allowance should be made for this fact when the results of this part of the study are compared with others.

\textbf{The American Red Cross Study-1954.}\hspace{1em} This study was conducted by the Educational Testing Service in 1954 for the American Red Cross. The problems were: whether television
could be used effectively to teach home nursing to adults viewing the programs at home, and how the results of such instruction compared with the results of the conventional classroom teaching.\textsuperscript{58}

The matched group controlled study method was used to obtain the information. Three experimental groups were set up as follows:\textsuperscript{59}

1. A television-only group which was to view thirteen half-hour programs twice a week in their homes.

2. A television-plus-practice group, which would view the programs, and in addition would get weekly practice sessions at headquarters, and

3. A classroom group, which was taught the regular course in seven two-hour sessions, which included lectures, demonstrations, and actual practice.

The television-only groups were set up in Houston, Texas, using the facilities of station KUHT-TV. Rather than giving the classroom course before the television course, the classroom group was organized in Oklahoma City. In all, 650 persons were tested before receiving the instruction, and 400 after having completed the course. Most of the dropout was in the two TV groups. All groups were given both written and performance tests after the course.\textsuperscript{60}


\textsuperscript{59} Benjamin Shimberg, \textit{op. cit.}, p. 6.

\textsuperscript{60} I\textit{bid.}, p. 7.
Television instruction was found to be as effective as classroom instruction in teaching the facts about home nursing, and in promoting an understanding of the principles involved in the care of the sick. The TV students did as well on the written test. However, they did less well on the performance tests than the classroom group. The difference was statistically significant, but even so, the results are inconclusive. Actually, the television groups learned more than the classroom groups when it is remembered that the TV groups spent about half as much time on the course as did the classroom students. 61

Those who had practice-plus-television did no better in the tests than did those who had TV alone. The students liked the TV instruction, and most said they would recommend the course to their friends if it were offered again.

Some problems arose in this study which may have affected the results. The fact that the TV group took the course in Houston, and the non-TV Group was in Oklahoma City might have made a difference in the results. Two different population centers were involved in the test. Different teachers were also involved, and the groups were not closely matched, as in the case of the Navy studies. A large sample was used, and the testing was identical for both groups. The tests, being both written and practical, adequately

61 Benjamin Shimberg, op. cit., p. 7.
covered the subject matter which was to have been learned in the course. The results may indicate the need for providing time and place for supervised practice of skills and techniques when they are to be taught by television. Although lectures and demonstrations might be handled by television only.

Summary. The several studies examined here which deal with television as a means of teaching adults offer substantial evidence that:

1. Television can be used as a teaching tool.
2. People learn as effectively by means of television as they do in the classroom teaching situation.
3. Most people tested preferred to gain their information by means of television.
4. Adults tested, retained what they learned on television.
5. Narration, plus meaningful film, or dramatization is a very effective method, and possibly the most effective method of presenting material which is to be learned and retained.

Chapter Summary

This survey of the evaluation of classroom broadcasts has shown some of the efforts made by educators to appraise the effectiveness of radio and television as a classroom teaching aid and as a direct teaching device. The studies are significant, for they represent, in most cases, first
adventures into the field of broadcasting to classrooms by educators. Most of them are first attempts at systematic evaluation of the two media as teaching aids.

Primary emphasis has been placed upon evaluation of television instruction, since this study is concerned with television. The studies cited in the early portion of the chapter gave evidence that radio is an effective aid to classroom teaching.

Television studies included in this chapter, particularly those dealing with broadcasts to schools, were principally exploratory in nature, many representing initial efforts in appraisal of the new medium.

Evaluation efforts in Washington, D. C., San Diego, California, Iowa City, Iowa, Philadelphia, Pa., Montclair, New Jersey, Great Britain, and Canada examined the feasibility of using television in the elementary and junior high school classrooms, plus the effectiveness of television as a supplementary aid to the teacher. The studies conducted by the Navy Special Devices Center, the Army Quartermaster Corps, the University of Houston and the American Red Cross were designed specifically to determine whether television was an effective device for teaching material to adults.

The different methods used in the research in television represented in this chapter fall into four broad categories:

1. Comparative studies of two or more groups of pupils, one which gains information by viewing television, the other by standard teaching procedure, and the third by still
another teaching medium. Tests are given
the matched groups, and results compared.

2. Questionnaire type studies, which inquire
from teachers and pupils specific reactions
to program content, production techniques,
and effectiveness of the programs.

3. Written reports by teachers, which provide
specific information.

4. Studies using teams of observers in the
classroom to observe the effects of the
television programs on the pupils, the
teachers, and the classwork in general.

Washington, D. C. used the comparative type study, the
questionnaire, and written report methods in the three
studies reported. The studies found that children viewing
television lessons in music appreciation learned as much as
those receiving instruction using the conventional methods.
They found that television could teach science to elementary
grades with a high degree of effectiveness, and that teachers
regarded TV as a useful in-service training device. TV
teaching was found to be helpful and worthwhile in the
Washington, D. C. Public Schools.

San Diego, California, like Washington, made use of
comparative study, questionnaire, and written reports in
three appraisals conducted between 1952 and 1954. The stu-
dies found television to be extremely helpful to the teachers
both as an in-service training device and as a classroom aid.
They found that the children were stimulated to further
activities in the areas served by TV.

The two Iowa Studies used the questionnaire technique
exclusively. The findings of these studies are substantially
the same as for San Diego and Washington, D. C. In addition, Oesterling's Iowa study of junior high school pupils reactions to television programs found that this group asked to see children their age on programs, and apparently were more interested in the material presented when they were used.

Philadelphia used the written report method of evaluation to obtain appraisals of their extensive classroom programming. The studies have found television to be of great help to the teachers, both as in-service training for the teachers, and as a supplementary aid. Students retain a high degree of material which is learned by television in Philadelphia, and do more outside work in areas covered by TV. Philadelphia reports that television is an aid to slow learners and to children with reading problems.

Great Britain's evaluations made use of observer teams in the classroom, and written reports by pupils in the classrooms to appraise their pilot experiment programs. The study found that television was of value to the teacher and to the pupils. It found studio demonstration and narrative to be the most effective teaching technique for its pupils.

Canada's pilot experiment in television in the classroom used the questionnaire method to secure information. Findings indicated that television had definite value to teacher and pupils, and recommendations were made to conduct further studies to find out the nature of these values.
The Montclair, New Jersey studies made use of questionnaire, written report, classroom observation by teachers, and comments of teachers and staff members to provide the data. The studies, which were exploratory, found that television could be used for teaching purposes on a day-after-day basis, and that in presentation of certain types of materials it was a superior teaching method. It indicated that television provides two teachers for each lesson; the one in the classroom, and the master teacher on TV. The best television teachers are outstanding classroom teachers not too remote from their own classes or pupils. Generally, television was found to be a teaching device with a wide variety of possible classroom uses, many of which have not yet been explored. The study recommended further experimentation with the medium.

The studies examined which were concerned with the effectiveness of television as a teaching tool to take the place of the classroom teacher used the controlled type of comparative study in all cases.

The two Navy studies tested Army and Navy Reservists to find out whether television could be used to teach them effectively. The studies found:

1. Television can teach reservists effectively both as live television programs, and as television recordings.

2. Men retained well what they learned by television; better in fact, than those who learned by regular methods.
3. The men tested preferred by far the TV teaching to live classroom teaching.

4. Narrative plus meaningful film, or dramatization was found to be a very effective method of presenting material when it is to be learned and retained.

The Army Quartermaster study conducted in Houston found essentially the same thing as the Navy studies; that men taught by means of television learned and retained as much as those taught by conventional classroom methods, and that the adult students tested preferred to gain their knowledge by television.

The standard pattern of evaluation for most of the classroom telecasts presented in this chapter has been the questionnaire and the written report method, with limited use of the comparative study. It is interesting to note, that all of the studies included in which adult subjects were used made use of the comparative type study.

The questionnaire method, when used by those producing the television programs, as in the case of Washington, D. C. and the San Diego studies has certain limitation. Bias on the part of the researchers must be considered as a possible factor affecting the results. It is also possible for the teachers to report results which they feel the "right ones" rather than the actual facts. The questionnaire technique depends upon a high degree of objectivity on the part of both those conducting the study and those supplying the information. The samples, in the case of the Washington, San Diego, Iowa, and Montclair studies were carefully selected,
and were of adequate size to obtain the data required.

Philadelphia's written reports seek both qualitative and quantitative information. They have certain limitations, which were pointed out earlier in the chapter. Preparing written reports on a weekly basis may become a chore which is dispatched in a perfunctory manner by the classroom teacher without much reflection or conscience. The opportunity to tell the "main office" what she thinks the school leaders want to be told, rather than what the facts happen to be is definitely present in this type of research. Nevertheless, with frank and honest appraisals and a good degree of objectivity, the reports can be of genuine value when viewed from a cross section of a school system as large as that of Philadelphia. The value of the report is greatest to those producing the programs, since they enable the producers to get immediate class and teacher reaction to their productions. In the case of Philadelphia, five years of such reports indicate trends, and bring interesting facts and opinions to light, many of which provide helpful material to administrators and producers. The reports represent a systematic, practical, and valuable method of evaluation.

The classroom observer technique used by the School Broadcast Service of Great Britain was well organized and competently guided by a staff of excellent research people. However, the technique introduces into the classroom certain factors which would tend to disrupt the normal day-to-day
routine. Class activity is not likely to be normal when two or three members of an observation team are present. Also, a novelty factor was present in the Great Britain study, as well as in Canada's, since no school telecasts had been seen by teachers or pupils before. Factors of this kind must have affected the results of the studies; to what degree is hard to determine. The value of the British and Canadian studies seems to be the fact that they convinced educational authorities in both countries that TV had a contribution to make to education, and that further use and study of the medium seemed justified. Their findings tend to substantiate results of other studies which have been done in the United States.

The Montclair, New Jersey studies differ from most of the others in this country included in this chapter in one or two ways. First, the studies began with the idea of evaluation. The emphasis was upon research from the beginning of the program planning, whereas in other areas the programs were produced primarily for classroom use and secondarily for evaluation of television. Second, the studies were of an exploratory nature, intended to open up other areas for appraisal in what was intended to be a five year program of intensive appraisal of TV in the classroom. Most of the other studies were of a series or short term nature. The Montclair study was set up by a competent team of research men, and was carefully designed to provide
specific information involving the use of teachers in TV, the use of television in the classroom and the analysis of the effects of television in specific impact areas. The early findings of the study are of significant value to all those involved in classroom broadcasting; it is unfortunate that the project was abandoned after the first year.

The studies developed by the Navy Special Devices Center and the Army Quartermaster Corps, using the comparative type of study were well organized and carefully planned by competent professional research psychologists. The results of these studies are extremely significant, for they offer conclusive proof that adults can learn and retain what they are taught by means of TV instruction alone. They are of further importance, for they present evidence that television recordings are almost equally effective teaching tools. One can infer from this information that if adults can be taught by television alone, certainly children in the classroom can learn by its use as a supplementary aid. It might further be assumed that certain lessons could be taught by television exclusively, where specialists could do an exceptional presentation which the average teacher would not be able to equal.

The University of Houston, and American Red Cross studies present further proof that television is an effective teaching device. When incorporated with the existing school studies, the findings tend to support the thesis which
educators have had about television since its inception: that it is an educational tool with great promise and manifold possibilities for education.

The studies included in this chapter suggest these conclusions concerning the use of television in the classroom, and as an educational device:

1. Television is an effective device for supplementing teaching in the upper elementary grades and junior high school.

2. Television demonstrates high value in its ability to bring experiences to pupils which ordinarily would be difficult for most groups to share.

3. Television has enrichment and motivational value as a classroom teaching aid.

4. Follow-up activities reported after television usage tends to indicate that television has value to teaching.

5. Children in classes where television was used showed a high degree of enjoyment in the programs.

6. Television is not a short cut to learning, nor is it a panacea for poor teaching or lack of initiative on the part of the classroom teacher.

7. Television appears to be a valuable in-service training device for the classroom teacher.

8. Adults can learn and retain what they learn when taught by television only.

9. Adults taught by television prefer this method of instruction over other types of teaching.

10. Television presentational methods most effective in teaching adults are: narrative, supported by meaningful film, or dramatized material.
However, several pertinent questions concerning classroom telecasting are left unanswered by the research surveyed. Can classroom television programs stimulate or change the interests of children and teachers towards school subjects? Can television in the classroom modify attitudes of the children and their teachers towards subjects taught? How receptive are teachers to the use of television in the classroom? What production problems confront the school television producer in the production of classroom telecasts? Could classroom teachers assist actively in the planning and production of classroom television programs? To these unanswered questions, and questions dealing specifically with the local classroom situation, the study described in the following pages was directed.
CHAPTER FOUR

PLANNING AND PRODUCTION TECHNIQUES
USED IN THE ART WORKSHOP SERIES

Most studies conducted in the area of classroom telecasts to date have placed primary emphasis on the evaluation of the series of programs. Those appraising classroom telecasts have been concerned primarily with the results of the programs, the effectiveness of the presentation, and the number of pupils who were being reached. As a rule, organization, planning, and production techniques have not been covered in sufficient detail to be of help to those wishing such information. In addition, little information has been provided concerning the problems encountered in the production of classroom television programs, or ways in which such problems might be minimized or avoided. For this reason, a detailed analysis of the production of the "Art Workshop" series and some of the problems which arose have been included in this study.

One important part of this particular study was the experimentation with a planning and production technique which involved intermediate grades teachers. A detailed description of this experimentation is provided for those interested in the techniques used.

124.
Planning Techniques.

Planning for the art series began in late October of 1953, when the writer met with the Director of the Ohio School of the Air, three elementary art supervisors of the Columbus Public Schools, the Radio-TV Coordinator of Ohio State University, two members of the art education staff of the School of Fine and Applied Arts, and the Director of the Bureau of Educational Research for the purpose of determining whether it would be feasible to produce a series of television programs in art for the intermediate grades during the winter quarter. The group decided that a ten or twelve week series of programs in art would be advantageous for the elementary teachers since help was needed in that curriculum area.

The task of planning a series of telecasts in art for the fourth, fifth, and sixth grades presented some special problems, since each of the classes in these grades was in the process of studying different things. A method by which single programs could be related to material currently being studied by children in each of their own schools had to be found.

To solve this problem, the planning group decided that the supervisors should select a number of teachers from the elementary schools of the Columbus area to help plan and prepare the content of the shows. To facilitate the organization of such a group, a special seminar course in art education was to be formed at Ohio State University, for
which selected teachers might enroll during the fall quarter. This seminar in art education was to meet two hours weekly at the University for three hours of university credit. The course was to be supervised by Dr. Manuel Barkan, Associate Professor of Fine and Applied Arts at Ohio State University. A production committee, consisting of Dr. Barkan, Dr. Jerome Hausman, (Assistant Professor of Fine and Applied Arts at Ohio State University) one teaching supervisor, and the writer was selected to do program planning and production, and to act as general guide for the series. The writer was given the task of handling the actual production of the several programs.

The large planning group held a second meeting in early November. Here, the following points were decided upon concerning the format of the programs and the production of the art series:

1. The programs were to be of the direct teaching type, using demonstration techniques. They were not to be too closely structured, but planned so that a maximum of flexibility of themes and techniques could prevail.

2. The School of Fine and Applied Arts of Ohio State University was to assign one staff member to be the master teacher for all the programs.

3. Children were to participate on the programs in order to illustrate points which the master teacher wished to emphasize, and to show development and application of art principles.

4. During the series, children were to be furnished by five of the seminar teachers who were to appear with the master teacher on the programs on a rotating basis. The teacher
appearing on a given program with her students would be present to direct their work and to aid in answering questions which the master teacher might ask about their art work.

5. The School of Fine and Applied Arts would work closely with these five teachers and their classes through the master teacher. The purpose of this would be to allow the master teacher to acquaint himself with the children and their art problems and their area of work.

6. Teachers' manuals were to be printed to accomplish two specific objectives:

   a. To set up the specific goals and objectives of the series, and individual programs.

   b. To disseminate helpful suggestions and materials to be used in the classrooms by the teachers.

7. Individual information sheets, or guide sheets were to be sent to each teacher using the series every week in order to give up-to-date information about the programs.

8. Themes for the telecasts were to be formulated two or three weeks in advance of each program. Specific themes would grow from the master teacher's visits to the classrooms of the five teachers, and from the discussions in the seminar. It was recognized that some themes would be developed and exhausted in one program, while others might run for two or three weeks.

9. Programs would be broadcast once a week, and the length of each program was to be thirty minutes.

10. Supervisors were to select the twenty intermediate grades teachers desired for the seminar. It was suggested that these teachers be a representative group, comprised of teachers with varying degrees of experience.

Following this meeting the writer met with the produc-
tion committee to design the format of the art programs, which were to be taught by Dr. Jerome Hausman, a member of the Art Education Staff of the School of Fine and Applied Arts at Ohio State University. He was selected because of his excellent background in art education and elementary teaching. The committee felt also that it was wise to use a man in this role for:

1. A man teaching the art work would convince boys viewing the programs that art was not "sissy stuff", and,

2. Since most elementary teachers are women, the children would find it refreshing if the "visiting teacher" were a man.

The series was named "Art Workshop". Two settings were planned for use on all of the programs. The first represented a corner of the master teacher's art studio. It was called his "Workshop". Adjacent to this small set, a second larger one was to be located; a simulated classroom, where the six or eight school children would work on their art projects with their classroom teacher. The classroom setting was to be furnished with standard classroom furniture. The general format of the program was arranged as follows:

1. Dr. Hausman was to open the programs (following the announcer's opening) from his workshop area. He was to be discovered working in his area as the camera opened on him. In three or four minutes, he would set the theme of the program, the art problems to be discussed and demonstrated, and the area of art to be developed during the program.

2. Dr. Hausman would then walk to the classroom set. The cameras were to show the studio
children working on various art projects, using different materials, much as they might in a class art activity. As the cameras picked up the different activities the master teacher would discuss the ideas the children were exploring, pointing out the many inventive ways in which they were using art materials. This was to take about seven minutes.

3. A specific art problem would be found in the classroom. To solve it, Dr. Hausman would take a student back to his workshop. In this unit, he was to talk directly to the camera, demonstrating how several methods could be used to solve the problem. Three to four minutes was assigned to this unit.

4. Dr. Hausman was then to return to the classroom set with the child. Other work would be shown, and points made by questioning the children or the teacher. Here Hausman was to relate the ideas the children worked on to things which might be under study in other classes, always using art work being done in the studio as examples of techniques. This was to take five or six minutes.

5. The master teacher (Dr. Hausman) was then to return to his workshop for another demonstration of a given art problem. A summarization was then to be given, followed by the closing of the program.

This format was drawn up to present to the first meeting of the teachers' seminar for approval and further revision. Modifications of the standard format were to be made as the series progressed.

The initial meeting of the art seminar was held in mid-November with three art supervisors of the Columbus Public Schools, the Director of the Ohio School of the Air, Dr. Barkan, and Dr. Hausman of the School of Fine and Applied Arts, twenty elementary school teachers, and the writer
present. The idea of the series was carefully outlined for the teachers in terms of what had been done to date, what some of the problems were, and in general, what the teachers would be expected to contribute.

The teachers were asked to discuss their own needs in art. They were asked what a television series could contribute to the classroom teacher. Most of the teachers were frank to admit that they felt generally inadequate in the area of art. Fifteen of the twenty teachers admitted the need for refresher courses in art, or at least some in-service training. Most of the teachers felt they needed to be more stimulating to their classes, and all felt they lacked the ability to evaluate their pupils' art work effectively. They recognized that their background in art was not sufficiently broad to enable them to give useful, specific criticism to the children.

All of the group of twenty teachers believed that a television series in art should aid the elementary teacher by teaching her new art concepts and bringing the student more meaningful art stimuli. Some of the objectives which the seminar group recommended for the "Art Workshop" series were these:

1. The series should free the children from the idea that art is "drawing pictures."

2. The series should free the children from pattern tracing and copying.

3. The series should enable the teacher to give effective, stimulating criticism to her pupils.
4. The series should teach that art is a creative thing which can be integrated into many areas... reading, social studies, geography, history, etc.

5. The series should demonstrate to children in classes what other children can do.

6. The series should give the teachers new ideas and training in art.

7. The series should point out to the children that art isn't necessarily limited to painting and drawing.

From this first meeting of the seminar group, it was decided that the broad purpose of "Art Workshop" would be to demonstrate the arts and to help children in using the arts. For children to learn through activity in the arts it would be necessary for the series to supply:

1. Help in selecting appropriate ideas to be "pictured" with art materials, and

2. Help in using art materials to put their ideas into satisfactory visual forms.

The programs were to aid the children viewing them to use their natural inquisitiveness by learning to invent and create new and growing ideas through activity in the arts.

The seminar took an active part in the planning and content of the programs by suggesting the problems which their children were encountering in art, and areas of art activity which children would probably like to have explored on the TV programs. The original format was revised slightly and approved by the seminar. The seminar teachers decided that the most convenient day and hour for the programs would be Wednesday morning from 10:00 to 10:30.
A series outline was formulated for the "Art Workshop" series, which set forth the production facilities required of the television station producing the programs. The series prospectus was drawn up primarily for the benefit of the station. It included:

1. The name of the producing agency.
2. The purposes of the series.
3. A brief description of the program series, and the format of the program.
4. An analysis of the intended audience, the preferred day of the week, and the time of the day needed to reach the audience.
5. The facilities and personnel which would be required of the TV station to produce Art Workshop.

This prospectus was submitted to the manager and program director of station WTVN at a meeting at which station time was requested for producing the series. The station extended its facilities for the use of Ohio State University and the Columbus Schools, agreeing to pay all production costs connected with the series, to provide the 10:00 to 10:30 time on Wednesdays and to share the cost of special publicity. The station further agreed to transport the children appearing on programs from their classes to the station and back again, both for rehearsals and the actual programs. The manager of the station also offered to help the schools secure television receivers. The program director of the station assigned the station's public service and education director to direct the series. It was also agreed that the schools
might rehearse one hour on Tuesday afternoons at WTWN, and
would be allowed an hour and a half of studio rehearsal time
prior to the broadcasts on Wednesdays, the final half-hour
of which could be with live cameras. The date of the first
program was set for February 17, 1954.

Once the services of the station were secured, plans
went forward to make the "Art Workshop" known to teachers
and educators in the area. The plan for publicizing and
promoting the telecasts had five purposes:

1. To inform teachers and parents that a class-
   room series was to appear soon.

2. To stimulate interest in using the programs.

3. To stimulate the sale and securing of TV sets
   for schools.

4. To inform teachers and parents how television
   might be used in the classroom, and

5. To tell parents what they could do to help
   secure classroom telecasts for their children's
   schools.

Staff members of the Ohio School of the Air, the Bureau
of Educational Research, the School of Fine and Applied Arts,
and other related departments of the university cooperated
in publicizing the series. The Audio-Visual Department of
the Columbus Public Schools, along with the supervisors and
the teachers enrolled in the seminar, carried the word to
meetings and conferences. Letters were written to school
administrators in the area, telling of the coming classroom
telecasts and suggesting that each school cooperate in the
experiment by making arrangements for at least one classroom
to use the series.

Newspaper articles, magazine stories for educational journals, city, county, and state publications, and the trade press, and short articles for the Educational TV News were written to publicize the series. In addition, spot announcements were run on station WTVN during the morning and early evening hours prior to the series to inform parents of the coming series. To reach teachers outside Columbus, similar spot announcements were supplied the Ohio School of the Air for insertion at the end of radio classroom programs broadcast to the elementary grades over the university radio station, WOSU.

Finally, a special publicity folder was prepared by the committee to be distributed among teachers, administrators, and parents. The text explained what the series would cover, when it would begin, for whom the programs were intended, how they could be used, who was responsible for their planning and production, over what station they would be telecast, and at what time, and what parents could do to help their children see the programs. These folders were mailed to about 200 teachers who were on the Ohio School of the Air mailing list, teaching in schools within the coverage area of WTVN, who had previously requested the teachers' manual for the Art School of the Air on WOSU radio during 1949 and

1 Sample publicity folder is included in Appendix A.
1950. Accompanying the folder was a small card which the teacher was to return to the Ohio School of the Air requesting the manual and other materials for the television series. The card also asked whether or not the teacher had a TV set available in her school. Superintendents and principals were sent an envelope with two folders; one for their own use, and the other to be given to the school PTA president. Folders were also sent to various educational agencies across Ohio, and several dozen were mailed to national educational groups, educational television organizations, and other school groups. Station WTVN financed the printing of the folders.

A teachers' manual was planned and prepared by the School of Fine and Applied Arts through Professors Barkan and Hausman with aid from the teachers in the art education seminar. Its purpose was to help teachers in the classrooms to use the telecasts more effectively. It was divided into four major parts:

- **Part I.** Contained the time, station, and dates of all the television programs in the "Art Workshop" series.

- **Part II.** Described in detail the purpose and nature of the "Art Workshop" series.

- **Part III.** Contained helpful suggestions to the teachers for using the telecasts with the class.

- **Part IV.** Contained useful information concerning the sources, preparation, and care of many art materials which were to be used in the telecasts.
Part three gave teachers some suggestions which it was hoped would result in maximum effectiveness of the series to the pupils and teachers alike. Some of the highlights of this section were these:

1. It was recommended that the television set size be a 21 inch screen. It was recommended that no more than two classes be allowed to view the programs on one receiver.

2. Since the telecasts would show much detail in art, it was suggested that teachers arrange to view the receivers in a classroom rather than in an auditorium.

3. A weekly newsletter would be sent to the classroom teacher to supplement the teachers’ manual. This would reach the teacher on the Monday preceding the Wednesday morning telecast of "Art Workshop". This newsletter was to be read prior to the telecasts.

4. Teachers were instructed to talk with their children after the programs about all of the things they had seen on the show. They were to help them understand the ideas Dr. Hausman talked about by relating them to the study in progress in their own classes.

5. Teachers were advised to spend several periods of work in the arts between telecasts. The purpose of this was to allow children the opportunity to test and explore the ideas and suggestions received from the previous programs.

Two hundred fifty teachers' manuals were printed for the series. Requests for at least 300 were received prior to the time the series went on the air; over fifty requests had to be denied. However, teachers who sent in requests for the manuals were sent the weekly news letters so that they could use the programs. Manuals were mailed to the teachers two weeks prior to the first broadcast of the series.
Teachers indicating they had TV sets in their schools, or had access to them were given first priority. Where several teachers from the same school requested manuals, only one was sent, although each teacher received the news letters during the series.

Production of the Series

The program format for "Art Workshop" was designed to include two basic elements:

1. The element of direct teaching by television, and,

2. The element of school children participating on the programs in a manner that would be as spontaneous, unrehearsed, and natural as possible.

All members of the seminar planning group believed in the impact of direct teaching in television as observed in programs such as "Ding Dong School," "Mr. Wizard", and school telecasts from Washington, D. C. and Philadelphia viewed on kinescope recording. Similarly, they agreed that school children generally enjoy watching children their own age doing the things which they too might do. It was felt that if children saw others their own age working in the arts, creating things with different art materials, solving problems in art, and enjoying it, they might gain confidence in their own ability to do such things. So the children were used as "identification objects" for the pupils in the school classrooms, and specifically to demonstrate art
problems, art techniques, and interesting ideas for the use of art media.

Planning the Series

The procedure in the production of the "Art Workshop" programs was as follows:

1. Dr. Hausman visited the five participating classrooms and their teachers on a regular basis in order to set the theme or main idea of the programs. Each of the five classes ultimately to be seen on "Art Workshop" was visited at least six times prior to the appearance of some of the pupils from that class on the programs. These visits lasted from one to two hours. During the visits, Dr. Hausman worked closely with the classroom teacher in the art work of the class. He became familiar with the art projects each class was developing, was accepted and respected by the classroom children and their teachers, and became intimately acquainted with the art problems of each of the children to appear on the programs. Themes for each class's program or programs were planned in these sessions.

2. At the final visit before the program, Dr. Hausman and the teacher of the participating class assembled the ideas to be used on the programs.

3. Following this session, the art education seminar met at that particular school in the classroom of the participating teacher.
a. This was done to afford the group an opportunity to see and discuss the projects which had been developed in the class by the children.

b. The teacher, pupils, and Dr. Hausman explained to the group the work progress, ideas expressed, the integration of art work with other studies, problems which had been solved, new media used, and new techniques involved.

c. Dr. Hausman and the teacher then explained the simple "run-down" of what was planned to be done on the coming program. In some cases pupils were called upon to show parts of the planned activity.

d. Following this, the seminar teachers discussed, criticized and commented upon the suggested ideas for the program. Alterations were often suggested for the tentative "run-down". Ideas concerning the content of the program were submitted by seminar members, and often added to the program. Ways in which the class work might be integrated into other study units were discussed. Generally, the group reached agreement as to the content of the program.

4. On the Thursday preceding the broadcast of each program, Dr. Barkan, Dr. Hausman and the writer held a script conference in which the program content was molded into a working production script. In this conference, problems related to television production, and the visualizing of art ideas were discussed and finally agreed upon for the program. New properties or scenery were discussed, the final format was developed, the visual material to be used were listed, special action or activity was worked out, special effects planned, technical problems were ironed out and the final studio set-up and rehearsal were arranged with
the television station. The copy for the newsletter to the teachers was also prepared at this session.

5. The writer then contacted the television director at WTVN for a "talk through" of the program plans, and to arrange for the ordering of slides or special title cards, special effects needed for the program, or other production details related to the programs.

6. On the Tuesday preceding the program, the writer (as producer), Dr. Hausman and the director of the program met at the television station for a general rehearsal. This was usually conducted in the following way:

   a. The writer-producer met the director at 4:00 p.m. to discuss production details.

   b. The children and teacher arrived about 4:30 with Dr. Barkan and Dr. Hausman. The children were shown around the studio in order to acclimate them to the new surroundings. They received a standard lecture concerning the cameras, microphone boom, lights, and other studio equipment.

   c. The teacher, Dr. Hausman, and the children did a rough "run through" of the program format with the director, during which difficult action was plotted, minor revisions made, and problems discussed. Some properties were shown to and used by the children. These were often left at the station until the following morning.

7. On Wednesday mornings, the day of the telecasts, the writer, the master teacher, Dr. Barkan, and the director met at the studio between 8:30 and 8:45 a.m. to dress the set, arrange properties, prepare the demonstration materials, preview any slides or film to be used, and to attend to the details which make up a television program.
a. The children and the teacher arrived at 9:15 by taxi. Their work materials were brought out and they were set to work immediately mixing paints, clay, and various art materials needed during the program. Effort was always made to get the children involved in their work for the morning as soon as possible.

b. Cameras were brought out at roughly 9:30 a.m., and close-up shots were often checked on camera. The basic camera positions and movement for complicated action of the program were rehearsed and set.

c. Transitions from one unit of the program to another were checked both for cameras and microphone and boom, with the master teacher "walking through" the program from start to finish for the benefit of the crew. Particular attention was paid to transitions from the return which Dr. Hausman had to make; each cameraman had to know his position for these moves.

d. All music, slides, film clips, or special opening devices were checked prior to 9:50.

8. The program was telecast from 10:00 to 10:30 a.m. with the writer assisting the director in the control room. The supervisors and Dr. Barkan viewed the programs on special monitors in the studio.

9. Following the program the writer, director, master teacher, and Dr. Barkan held a short critique session to discuss production flaws and special production problems.

10. The teacher and her pupils were returned to their classes by means of taxis and the writer, supervisors, and master teacher returned all properties to the schools.

11. The art education seminar met at 4:30 p.m. on the same Wednesday. At this meeting the entire program was
It was thoroughly criticized, and suggestions were made for alterations and improvements. The reactions of the teachers and pupils were carefully noted. Written reports were submitted at each meeting by all of the teachers in the seminar covering various phases of the program, its effect on the children, the production, etc. Discussion of the program just broadcast lasted approximately one-half hour, after which the group moved on to the next week's program idea, and the cycle began again.

This production technique, utilizing the panel of elementary teachers to aid in planning the content of the programs, was used throughout the series.

**Production Problems Encountered on "Art Workshop".**

Numerous production problems presented themselves in the course of the eleven programs on "Art Workshop." For the sake of clarity they have been divided into four groups:

1. Program format problems,
2. Production problems of a technical nature,
3. Production problems relating to talent, and,
4. Production problems concerned with school-station relationships.

**Program Format Problems**

Following the first program, it was rather obvious that too much subject matter had been included within the thirty minute program time. Teachers complained that insufficient
time had been allowed by the master teacher to view the art objects properly. This was remedied in later programs by showing fewer objects and keeping them on camera for longer periods of time.

Experimentation was conducted to find out which the pupils preferred:

1. To see more of the master teacher than the children in the studio classroom, or,

2. To see more of the children and their art work.

After two programs in which the master teacher was on camera most of the time, teachers brought back fairly unanimous reports that their pupils wanted to see more of the children on the programs. They reported that their pupils learned a lot from watching the children on the program. Accordingly, an adjustment was made that called for two-thirds of the total program time to be spent in the studio classroom on subsequent programs, but with the master teacher talking off camera and explaining the work going on in the studio classroom. This new technique brought favorable comment from both teachers and pupils alike.

Changes of this sort were possible through the close coordination provided by the classroom teachers in the seminar. Through them, the producer was able to feel the pulse of the classrooms viewing the programs, and to revise and rework the program or units of it quickly and whenever necessary.
Three program formats from the series are shown on the following pages. Figures 1 through 3 show program formats for programs 2, 5 and 6. A comparison of these formats reveals the flexibility of the programs.

The criticism most frequently voiced concerning the second program's format was that there was too much of the master teacher, with not enough opportunity to see the children and their work. From unit four on, the program moved slowly, due to the length of the fifth unit, and to the fact that units five and six both took place in the same area, (See figure 1.)

Program number 5 made a strong effort to show the children more frequently. More activity and movement was attempted. As figure 2 shows, units four and six were added. The introduction and summary were shortened. The biggest change was the idea of Dr. Hausman not appearing in the studio classroom, but being heard asking questions off camera.

The sixth program had an even shorter introduction, as figure 3 shows. The classroom sequences, where the strongest interest had been manifested both by teachers and pupils, were lengthened to eight minutes. The device of having the children move from one area to the other proved to be too cumbersome and awkward; children had a tendency to trip over microphone or camera cables. Hence, only one child was brought to the Workshop area in unit three. The second appearance of children in the last unit was eliminated.
## ART WORKSHOP PROGRAM FORMAT FOR PROGRAM NO. 2, FEBRUARY 24.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening</td>
<td>:30</td>
<td>:30</td>
</tr>
<tr>
<td>2.</td>
<td>Hausman opens program. Gives:</td>
<td>3:30</td>
<td>10:4:00</td>
</tr>
<tr>
<td></td>
<td>a. Background of study of water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Tells what class is doing now.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Gives cue to go to classroom. Crosses to classroom set.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Hausman in classroom with teacher.</td>
<td>7:00</td>
<td>10:11:00</td>
</tr>
<tr>
<td></td>
<td>a. Discusses mural with teacher.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Talks to children about mural.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Each child explains his part on mural.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Hausman moves to area where mobiles are being made. Does the same process with mobiles as for murals.</td>
<td>6:30</td>
<td>10:17:30</td>
</tr>
<tr>
<td>5.</td>
<td>Hausman returns to Art Workshop area.</td>
<td>7:00</td>
<td>10:24:30</td>
</tr>
<tr>
<td></td>
<td>a. Talks about murals. Demonstrates</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Talks about mobiles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Hausman presents summarization of the lesson.</td>
<td>4:00</td>
<td>10:28:30</td>
</tr>
<tr>
<td></td>
<td>a. Summary of the items covered.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Teaser for next week's program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Plugs next week's Science Series.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Program Closing</td>
<td>:30</td>
<td>10:29:00</td>
</tr>
</tbody>
</table>
Figure 2.

ART WORKSHOP PROGRAM FORMAT FOR
PROGRAM NO. 5, MARCH 10

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening</td>
<td>:30</td>
<td>10:00:30</td>
</tr>
</tbody>
</table>
| 2.   | Hausman opens with a small hand puppet.  
|      | a. Introduction of unit on puppets.  
|      | b. He tells what the class is doing.  
|      | c. He moves to studio class, staying beside camera, not seen in class. | 2:00 | 10:02:30 |
| 3.   | Hausman moves to teacher and children 6:00 | 10:08:30 |
|      | a. Hausman talks with teacher and children about puppets, puppet heads,  
|      | b. He brings up problems of one or two of children, and returns to workshop with two of them. |
| 4.   | Hausman in Workshop area with two children.  
|      | a. Discuss puppet bodies, how to make faces, and build characterization.  
|      | b. Sends children to class area.  
|      | c. Hausman returns to class also. | 4:30 | 10:13:00 |
| 5.   | Teacher and Second Group of Children.  
|      | a. Explain how to make marionettes.  
|      | b. Demonstrates arms, legs, heads.  
|      | c. Shows how to string marionettes. | 7:00 | 10:20:00 |
| 6.   | Hausman takes two more children back to Workshop to discuss problems in stringing marionettes. | 5:00 | 10:25:00 |
| 7.   | Hausman summarizes the lesson.  
|      | a. Uses children to help him.  
|      | b. Plugs science show.  
|      | c. Walks to classroom with teacher and children for next weeks preview. | 3:30 | 10:28:30 |
| 8.   | Program Closing.                | :30       | 10:29:00 |
Figure 3.

ART WORKSHOP PROGRAM FORMAT FOR
PROGRAM NO. 6, MARCH 24

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening</td>
<td>10:00:30</td>
<td></td>
</tr>
</tbody>
</table>
| 2.   | Hausman opens program from Workshop  
      a. Brief description of drawing work.  
      b. He moves to classroom to class.  
      (Stays off camera the while.)  
|      | 1:30 10:02:00                  |           |          |
| 3.   | Classroom sequence at first table area.  
      b. Shows finished products on wall  
      c. Hausman returns to workshop.  
|      | 8:00 10:10:00                  |           |          |
| 4.   | Hausman in Workshop; one child with him.  
      a. Discuss drawing problems.  
      b. Demonstrates problem solution.  
      c. Hausman cues return to classroom.  
|      | 5:00 10:15:00                  |           |          |
| 5.   | Classroom sequence at second table area.  
      a. Problems of perspective, setting up picture relationships, looking at pictures.  
      b. Showing of finished products on wall.  
|      | 8:30 10:23:30                  |           |          |
| 6.   | Hausman returns to the Workshop alone.  
      a. Demonstration of perspective on a flannel board.  
      b. Shows prints to demonstrate perspective.  
|      | 5:00 10:28:30                  |           |          |
| 7.   | Program Closing.               | 10:29:00  |          |
because this appeared unnatural, and interfered with the flexibility of the summarization portion of the program. Summarization was much more effective when the master teacher talked directly into the camera, instead of to children in the studio.

The technique of putting the master teacher "off camera" on the studio classroom sequences proved very effective. When Dr. Hausman moved from the Workshop area towards the Classroom area, he moved with the camera covering his movement. As he came out, he stepped towards the camera, which "panned" away from him towards the classroom. This put him directly beside the camera, where he remained. The boom microphone in the studio followed the teacher and her students, while Dr. Hausman's voice was picked up by means of a hand microphone he carried. Occasionally when he asked a question of the teachers or a youngster, he moved in front of the camera just far enough so that one of his shoulders was visible. In a sense, he became the camera, or the eyes through which the classroom viewers saw the activity in the studio classroom. When it was time to return to the Workshop, he asked one of the youngsters who had an interesting problem to return with him in order to show how it could be solved. Hausman moved quickly back to the Workshop "off camera", while the camera followed the child. These transitions were always planned in advance.

The format for program number six was adopted for the remainder of the series and proved to be extremely workable.
Its flexibility allowed for adequate movement, sufficient units to maintain variety, and provided plenty of opportunity to see members of the studio class engaged in art activity.

"Art Workshop" made its debut on February 17, 1954, and ran for eleven consecutive weeks through April 28. During the series, the following art activities were covered on the programs:

Figure 4.
"ART WORKSHOP" SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 17</td>
<td>Painting, Shadow Boxes, Dioramas, and Shadow Puppets</td>
</tr>
<tr>
<td>February 24</td>
<td>Murals and Mobiles (Water Study Unit)</td>
</tr>
<tr>
<td>March 3</td>
<td>Block Printing, Potato Printing, String Printing, and Various Printing Methods. (Water Study Unit)</td>
</tr>
<tr>
<td>March 10</td>
<td>Puppets and Marionettes</td>
</tr>
<tr>
<td>March 17</td>
<td>Puppets and Marionettes (Puppet Show Designing Puppet Scenery, Stick Puppets and Marionette Stringing)</td>
</tr>
<tr>
<td>March 24</td>
<td>Drawing and Painting Techniques (Unit on Great Men) Perspective Problems</td>
</tr>
<tr>
<td>March 31</td>
<td>Sculpture and Three &quot;D&quot; Objects, Wire Sculpture, Clay, Paper Mache, Etc...</td>
</tr>
<tr>
<td>April 7</td>
<td>Sculpture, and Fire Brick, Decoration of Pots, and Making of Easter Hats</td>
</tr>
<tr>
<td>April 14</td>
<td>Review Program Showing Usage of Media in a Typical Class</td>
</tr>
<tr>
<td>April 21</td>
<td>Mexican Art. Murals and Figure Drawing</td>
</tr>
<tr>
<td>April 28</td>
<td>Mexican Art. Masks, Three &quot;D&quot; Objects, Paper Mache Figures, Metal Masks, and Figure Drawing,</td>
</tr>
</tbody>
</table>
Technical Problems.

**Cameras.** One technical problem which arose immediately was the number of television cameras to be used on "Art Workshop". Since the programs were to demonstrate art media and their use in creating art objects, and it would be impossible to do this effectively with one camera, two cameras were requested and used for all of the programs. As the programs progressed it became evident that "close up" and often "big close up" shots would make up a high percentage of the camera shots on the programs. There was a tendency on the early programs to emphasize the children as a group rather than the art process involved. Complaints from teachers soon proved that it was necessary to show more of the processes, and not so much of the children. The rule became "Show the hands more often than the face." The director frequently used both cameras on close-ups, cutting back and forth between them. As a result, an occasional problem arose when a change of scene or location came up abruptly. Three cameras could have been used to advantage on many occasions.

**Lighting.** Special consideration had to be given to lighting on the "Art Workshop" programs since a high proportion of each program was devoted to "close up" and extreme "close up" shots. Both the workshop and classroom area used considerably more foundation and spot lighting than most TV programs. The desk and tables used by the children were
well spotted with light both from the front, and from above, and rear, since the children, in working, frequently moved around their tables and desks. Early in the series, distracting shadows were frequently cast on the pupils' work because no special lighting had been provided. Quite often murals and smaller pieces of art work were displayed on the walls of the classroom set. This necessitated special lighting in order to give emphasis to the features of the work. As a consequence, much more "area" type lighting was used on "Art Workshop" than would normally be required.

Even with special lighting provided to bring out detail in the art work exhibited, it was found that certain products were difficult to show by means of television. Products which created the most serious problems in this respect were mobiles, wire sculpture, marionettes, clay sculpture, three dimensional figures, and some art processes like block printing, string printing, and colage. Special background materials had to be placed behind wire sculpture and mobiles in order to show them effectively. When shown without such backgrounds, these objects had a tendency to get lost in space. Light-colored poster stock in a medium grey was used to hold behind such items so their contours were well defined on camera. After the second program, the production crew had several shades of poster stock in various sizes available for use in these situations. These backgrounds were also used for clay figures, marionettes and puppets.
This problem was closely related to that of previewing the art objects to be seen on the program. This was found to be quite necessary. Often objects which the studio crew insisted would show up well appeared faded on camera. Art objects were checked for lighting and background to see how their colors would blend on monochromatic television. The only way to make such a check was to view the objects "on camera". It necessitated at least a "walk through" rehearsal of all the objects to be shown on the program, looking at them just as they were to be seen on the air.

**Flip Cards.** "Flip cards" were used for opening titles and for the opening and closing credits. This was not sound practice, although economical. The obvious disadvantages of "Flips" were these:

1. They always required one studio camera, and caused the moving of a cumbersome flip stand into the setting both at the beginning and the end of the program.

2. The lighting on the flipstand was never uniform, since it was used wherever it would least impede other action.

3. The flip cards became rather dog-eared and nondescript looking before the termination of the series.

It would have been far more practical to use two-by-two transparency slides rather than flip cards. Slides can be kept to a definite quality each time projected, they do not deteriorate, are much easier to store, and do not require a floor camera for transmission, since they are projected directly into the TV system from the projection room.
Audio Problems. Audio problems were encountered quite early on the series. At first a single microphone boom was used to pick up all of the sound portion of the program. This proved impractical. Fifth and sixth grade children are naturally shorter than adults. When children are seated in their own school chairs, with the adult standing beside them, an audio problem appears. Frequent occurrences of "split audio" were encountered on the first two programs. In picking up the conversation of one person talking to another, the one (teacher) who is taller than the other by a considerable margin tends to "boom in" on mike, while the other seems to be at a great distance. Furthermore, the master teacher deliberately decided to be "off camera" on some sequences. How was he to talk to the children and their teacher, and have them respond and be heard? The problem was solved in this manner:

1. Adults appearing on the programs were instructed to come down to the level of the child whenever talking to him. If the child was sitting, the adult was to kneel beside him. If he was standing the adult was to bend down a bit.

2. The master teacher was provided with a stick-type microphone. From this point on the teacher and her pupils were picked up by the boom mike, and the master teacher by the stick mike which he carried whenever "off camera."

The opening and closing units in the Workshop, or certain long units there, were picked up by the boom microphone. Cue lines were inserted into Dr. Hausman's script in these places, so that the boom operator could be warned to move
the microphone to the classroom ahead of Dr. Hausman, in order to be ready to pick up the teacher's remarks while Dr. Hausman's comments were picked up by the stick mike. Even with elaborate and carefully worked out cues, the teachers on a number of occasions, began talking prior to the arrival of the boom. The boom man had to be very alert, for unseasoned performers were at work, and it was easy for them to forget the limitations of the boom.

**Projection Problems.** Another problem which arose was the projection of three-by-four-inch transparency slides through the TV system. The station's projection room had no three-by-four slide projector. Further, the master teacher wished to show the slides in the studio so that he could point out items of interest. This was solved by means of rear screen projection. A small projection screen was made of a twelve by sixteen inch pane of ground glass mounted on a portable wooden stand. A three-by-four slide projector provided by the University was mounted about six feet behind this screen, and the slides projected onto it. A television camera moved in close, and picked up the projected material. In order to obtain best results it was necessary to extinguish the studio lights in the vicinity of the screen. The master teacher simply announced that he was about to show some slides, and the lights would have to be dimmed. The slides showed up nicely on the TV system, and the children enjoyed seeing a show within a show.
Sets. Should scenery be used, or could the programs be done with a background of plain curtains? This problem was solved by one of the basic demands of the programs: the Classroom area had to give the impression of the average classroom; the Workshop area had to suggest an art studio. The set was semi-realistic. Art objects had to be displayed on the walls of the set as well as on the tables, since murals, life sized figure painting, tapestries, and other large works of art were to be displayed. Standard television flats were used. The set included one threefold flat, comprised of three flats, six by ten feet, two single six foot flats, and three small four by ten flats. All of these were standard type theatrical frames covered with light wallboard material, and painted a medium grey.

Sufficient area was provided in the classroom setting for all types of art activity, since it was known that children might be required to work on the floor, at the back of the set, on the sides, or within it on desks and tables. The classroom area was about eighteen feet by twelve feet, while the Workshop was actually quite small, being at most eight by seven feet. Classroom furniture, borrowed from the Columbus Public Schools was used in the studio classroom. Both old-fashioned school benches and more modern tables were used at different times in order to suggest ways of working with both types of seating arrangements.
Production Problems Relating to Talent

The idea of using five teachers and five select groups of students on "Art Workshop" had both disadvantages and advantages. It provided a certain amount of variety in presentation and ideas, and spread the participation to more schools. No one school had a monopoly on appearances on "Art Workshop". The original planning committee felt this was a better system than using only one participating teacher and her class throughout the entire series. It is the writer's opinion that the disadvantages of this system outweighed the advantages. Using five participating teachers and children from as many different schools meant that no one teacher appeared on more than two programs. Thus, the only person on the program who gained in TV know-how was the master teacher. Every third program, a new process of television orientation had to be undertaken for teacher and pupils alike. By the time that basic video techniques had been nicely learned by one group, a new group moved in. As a result, additional rehearsal time was required. The constant change of teachers and pupils appearing on the programs meant, too, that the viewing children never really became acquainted with the children appearing before the cameras. Some of the teachers were better TV performers than others. For the most part, the five who appeared on "Art Workshop" responded nicely to the challenge, and did creditable jobs in a new medium to which they were almost
completely unaccustomed. But each of the five teachers did a much better job on her second TV appearance, suggesting that the series would have been smoother and more effective if the same teacher could have been used for the entire series of programs. Another weakness appeared in the method of choosing the five teachers. They were selected wholly by their supervisors. These supervisors were perfectly competent to judge the ability of the teachers as far as classroom teaching was concerned, but were outside the realm of their field of work in selecting them for appearance on television. It would have been wiser to conduct a simple audition, or to allow the TV producer and master teacher to observe their work in class and aid in the selection. Fortunately, all five of the teachers did well on the programs, considering the brevity of their training and appearance.

The Master Teacher. The problems of transforming a master teacher into an individual who also knows certain television techniques is one which required time, experience, and hard work. The ideal way to accomplish this would be to enroll the TV teacher in a TV workshop course, where he would be allowed to operate a camera, mike boom, lights, be a floor director, write some continuity, direct a few simple programs, and in general learn the limitations and the assets of the television medium. This, of course, was impossible. Every effort was made, however, to familiarize the master teacher with the television studio, and the
techniques required for smooth work on the studio floor. Prior to the series, the master teacher, the teaching supervisors and Dr. Barkan were given a studio tour in which the system was explained, and all questions related to TV production were answered by the director or the producer. Behavior before the camera was demonstrated and explained, and by the time the series was completed the master teacher had become a seasoned performer.

**Children as Participants.** The use of children on the programs presented interesting problems. One of the major ones was that of transportation. A means had to be found of transporting the children from the schools to the television station. School buses were not available at the time of day the programs were planned. Private transportation was not covered by insurance in the event of an accident on icy winter streets. This problem was solved prior to the opening of the series when the television station, WTVN, offered to transport all children appearing on the programs by taxicab.

A second problem was the time at which the children were brought to the station on the days of programs. If they arrived too early, they ran out of things to do and became bored before the program started. If they arrived too late, they were over-excited and high strung. It was found that if brought to the station about forty minutes prior to pro- gram time, the children could be involved in their art work and kept busy right up to air time.
The children had to be told how to hold art objects for the "close-up" shots and to slow down their working speed so that the television cameras might show their work to best advantage. Each new class group had to be oriented to the cameras, boom, and other studio equipment prior to air time, so that they would not stare fixedly at the cameras while on the air. They had to be cautioned not to get between the camera and their art work at any time. Rehearsals presented no problem, since the children loved to work with Dr. Hausman and were given no lines to memorize or parts to play. They were simply interested in their art work, and asked questions that it prompted. The children reacted and behaved perfectly on all of the programs.

A third problem arose in conjunction with the children. Studio space available, plus the necessity for transporting the children by taxi, limited the number that could be used on any one program. The tendency at the beginning of the series was to use too many children. The feeling was to "give as many as possible the valuable experience of being on a TV program." Ten children appeared on the first program. This was too many. The number was reduced to eight. More children were given the chance to appear by bringing in two or three new faces on a particular school's second television appearance. The group of eight proved workable, and gave the impression of a much larger class.
School-Station-Relations Problems.

Generally speaking, the working arrangement between the school production group and station WTVN was quite satisfactory. The production staff of the station was very helpful and for the most part patient with the educators. But in the situation, some problems were certain to arise.

One problem was basic. It was difficult for the cameramen, audio crew, production personnel, and even the director to comprehend that educational programs intended for classroom use could not be presented "off the cuff" as many of WTVN's programs were. Much more attention had to be paid to little details on "Art Workshop" than for most programs. Often an educational principle lay behind the exhibition of a single art object. If the close up picture was fuzzy, faded, shown against an improper background, or from an unsatisfactory angle, the principle was not made clear. It was most difficult to get the director to understand the need for rehearsal of the close up shots, the transitions, and the attention to detail needed to make "Art Workshop" an effective program. Actually, the closest the programs ever came to having rehearsal time on camera was the half-hour prior to programs. During this time the art objects to be shown on the program were previewed, as previously described. This came only after many complaints on the first two programs from the teachers and pupils. In classroom television, close-ups are so widely used that camera rehearsal is essential.
Ideally a person well versed in art education and elementary education should have directed the programs. Someone familiar with the problems of classroom teaching, and sympathetic with the teacher was needed in the director's seat. This was not possible. It was one of the weaknesses of the production of "Art Workshop"; a weakness which was only partially solved by the close coordination between the writer and the director. To solve the problem the director was invited to the seminar sessions, asked to visit the schools, to sit in on the planning sessions, and to help organize the series with the writer and the supervisors. He attended some of these sessions, but demands on his time at the station never permitted enough participation on his part in the planning of programs to eliminate the problems. In other respects, the school-station relations were good.

Chapter Summary.

A detailed description and analysis of the production of the "Art Workshop" series, and the experimental planning techniques used has been included in order to provide information concerning the problems often encountered in the production of classroom telecasts. Some generalizations from this experience are set forth below.

The use of a panel of twenty teachers to help plan the content of the television programs in art was of definite
value to the producer and master teacher, as a liaison between the classroom and the television studio. Discussion of each television program with the panel prior to putting it in final broadcast form was of value to the master teacher and the producer, for often it clarified ideas, and brought to light a new production technique which could be used in the presentation of a given idea. One disadvantage of the panel lay in its size. The group was too large; as a result, planning often consumed more time than necessary. In the opinion of the writer, equally satisfactory results could be obtained using a panel of only four or five representative teachers.

The idea of the master teacher visiting individual classrooms to work with children who were to appear on subsequent programs proved to be of considerable value, although time consuming. The important contribution made by this technique was that each program dealt with an art problem from an actual classroom point of view. In addition, the master teacher became acquainted with the class problems, established rapport with his TV participants, and learned the attitude and interests of the teachers who participated on the programs. The advantages of the method were offset somewhat by the amount of time consumed in visiting each class several times prior to preparing the script. In terms of man-hours, the technique was too expensive. Modification of this system, minimizing the number of class
sessions held, would perhaps make it more practical.

Program formats were altered several times to find more effective means of presenting art to the classes. The format which proved most workable was that used from program six through the remainder of the series. This format placed emphasis on the art work done by the TV children; problems explained by the master teacher in his workshop, and demonstrations of art processes. The format made use of movement, participation of the children, interesting transitions, problem-solution, direct teaching, and demonstrations and exhibits.

Most of the production problems encountered on the art series were surmountable. Most often they involved seemingly small details. The producer of classroom television programs must have a sharp eye for these small details, for often an educational principle fails to become clear if attention to detail is neglected. Matters such as proper lighting on special objects, transition material, proper background for art objects, audio pick-up, framing up a close-up shot properly, and ways to keep participating teachers and children busy prior to program time must be provided for and worked out for the good of the entire production.

The working relationship between television station and school system must be kept friendly and smooth at all times for best results. This is especially true where school systems are working in a cooperative relationship with a
commercial television station. Ideally, the director of classroom telecasts should be sympathetic to the problems of teaching and should know the subject matter which is being presented. Realizing this isn't possible in most cases, it becomes imperative that the producer act as the liason between school and television station, supplying the objectives to be attained, and suggesting definite and specific techniques for achieving the desired results. Through a cooperative arrangement with the station director, the producer should be free to insist that proper attention is paid to details whenever it appears to be necessary for the good of the telecast.
CHAPTER FIVE

EVALUATION OF THE "ART WORKSHOP" SERIES

Early chapters have dealt with the history of classroom broadcasting, and with the effectiveness of school telecasting. Chapter four discussed the planning, production, and general problems involved in the "Art Workshop" series. As pointed out in the third chapter, educators have conducted very little research into the effect television has had in attitude and interest modification. Other questions remain to be answered concerning the effectiveness of television in the school classroom as a supplementary teaching aid.

Early in the planning of the "Art Workshop" series, it was decided that the telecasts would be appraised along several exploratory and descriptive lines. The evaluation of the series was of a dual nature, aimed at determining the effect of the series both on the teacher and on the children she taught. The writer wished to find out the immediate reactions of the teachers to individual programs, as well as their reactions to the series as a whole. Information was sought also concerning the reactions of the children to individual programs in the series, and to the entire series.

To secure the desired information concerning the effectiveness and the results of the "Art Workshop" series, five distinct appraisals were conducted. They were:

165.
1. An evaluation and criticism of individual programs in the "Art Workshop" series, made by a group of twenty teachers who were members of the art education seminar group that helped plan the art programs.

2. An appraisal of the extent of student interest in the programs and of the effects of the whole series on student interest in art, made by a group of forty teachers in whose classes all of the programs were seen.

3. A study of the effects of the series on the interests of teachers themselves, based on questionnaires filled out by the same group of forty teachers.

4. A general evaluation of the series of programs taken as a whole, made by each of a group of seventy-three teachers who had viewed the programs with their classes.

5. An evaluation of individual programs based on the direct responses of sixty-three fourth and fifth grade children.

This chapter describes the research methods used to evaluate the "Art Workshop" series, and presents the results of this evaluation.

**The First Evaluation Procedure**

The first evaluation procedure was an evaluation and criticism of individual programs in the "Art Workshop" series made by a group of twenty teachers who were members of the art education seminar that helped plan the programs.

**A Description of the Methodology Used.**

The first evaluation used the questionnaire technique to obtain the reactions of teachers to the individual "Art Workshop" programs. The questionnaire contained twelve
questions, so designed that they could be answered easily with "yes" or "no" answers, or multiple choice types which could be checked. (A copy of the questionnaire is provided in appendix B.) The information carried by the questionnaire included: reactions of the teachers to the content of the programs, suitability of the ideas to the teaching curriculum and to the class level, effectiveness of spacing of the programs, clarity of the visual materials used, reactions of the classroom children to the children appearing on the programs, classroom childrens' reactions to the master teacher, features of the program needing immediate correction, and miscellaneous comments.

Each seminar member filled out a separate questionnaire form for each program in the series. These completed forms were submitted to the writer after each meeting of the seminar group.

This method was used to keep the production and planning group informed of the classroom reaction to the various program formats and production techniques used while the series was still in progress. These completed questionnaires also provided an aggregate of the teachers' reactions to the entire series.

The seminar teachers were used because they had helped plan the program content and knew how the programs were to be presented. They were free to observe the reactions of their pupils during the programs. Trained and cautioned
in the seminars to be critical and honest in their appraisals, it is believed that these teachers conscientiously reported what they saw and heard.

Findings of the First Evaluation

The results of the information provided by the twenty teachers for all of the programs in the "Art Workshop" series are presented in Table I.

The twenty seminar teachers indicated they found most of the programs to be either of "great interest" or "quite interesting." They indicated that the programs had some positive value as a device for stimulating art activity in their classes, and that they felt that art materials could be shown satisfactorily on television. Teachers were able to use many of the ideas set forth on the programs, and said that most of the ideas were related to their curriculum. They agreed that the programs captured and held the interest of their children.

Questions nine through twelve on the questionnaire asked for detailed comments about the participating children, the master teacher and the program in general, and for miscellaneous criticisms and remarks. These answers could not be tabulated. They indicated generally that the viewing children were very critical of the children on the programs. Children watching the programs enjoyed it whenever a child did something well. They insisted on seeing more of what
### TABLE 1.

REACTIONS OF TWENTY SEMINAR TEACHERS TO INDIVIDUAL "ART WORKSHOP" PROGRAMS

<table>
<thead>
<tr>
<th>Teachers Reporting:</th>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
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<tbody>
<tr>
<td>Percentage stating program was* of great interest</td>
<td>68</td>
<td>21</td>
<td>66</td>
<td>45</td>
<td>90</td>
<td>66</td>
<td>42</td>
<td>60</td>
<td>35</td>
<td>50</td>
<td>45</td>
<td></td>
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<tr>
<td>quite interesting</td>
<td>32</td>
<td>35</td>
<td>22</td>
<td>42</td>
<td>10</td>
<td>17</td>
<td>21</td>
<td>20</td>
<td>20</td>
<td>25</td>
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</tr>
<tr>
<td>just interesting</td>
<td>0</td>
<td>28</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>17</td>
<td>27</td>
<td>0</td>
<td>55</td>
<td>25</td>
<td>35</td>
<td></td>
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<tr>
<td>fair or poor</td>
<td>0</td>
<td>16</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Ideas related to the curriculum yes</td>
<td>85</td>
<td>92</td>
<td>88</td>
<td>94</td>
<td>100</td>
<td>100</td>
<td>73</td>
<td>80</td>
<td>70</td>
<td>65</td>
<td>70</td>
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<tr>
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<td>15</td>
<td>8</td>
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<td>0</td>
<td>5</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>Program held interest from very start</td>
<td>73</td>
<td>78</td>
<td>100</td>
<td>94</td>
<td>95</td>
<td>66</td>
<td>57</td>
<td>55</td>
<td>35</td>
<td>20</td>
<td>25</td>
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<td>later in program</td>
<td>27</td>
<td>22</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>34</td>
<td>32</td>
<td>35</td>
<td>65</td>
<td>80</td>
<td>70</td>
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<td>at no time</td>
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<td>0</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td></td>
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<tr>
<td>Program suited to class 100</td>
<td>86</td>
<td>100</td>
<td>86</td>
<td>100</td>
<td>100</td>
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<tr>
<td>above class level</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>20</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>below class level</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Program paced about right 63</td>
<td>16</td>
<td>17</td>
<td>80</td>
<td>90</td>
<td>96</td>
<td>85</td>
<td>65</td>
<td>40</td>
<td>70</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unevenly</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>too slowly</td>
<td>0</td>
<td>21</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>50</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>too rapidly</td>
<td>16</td>
<td>63</td>
<td>83</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarity of visual material yes</td>
<td>68</td>
<td>86</td>
<td>98</td>
<td>80</td>
<td>99</td>
<td>94</td>
<td>89</td>
<td>90</td>
<td>90</td>
<td>85</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>32</td>
<td>14</td>
<td>2</td>
<td>20</td>
<td>1</td>
<td>5</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Program stimulated art work yes</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>92</td>
<td>96</td>
<td>85</td>
<td>25</td>
<td>90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>15</td>
<td>75</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
the children on the programs were doing. Teachers' comments indicated that the viewing children gained new ideas and confidence from seeing children their own age working in new art media or with familiar art materials. Comments concerning the master teacher indicated that most of the student viewers were very favorably impressed with him. Teachers reported that quite frequently the children applauded after he finished a program. Constructive criticism received in the miscellaneous answers included everything from critical remarks about the lighting to portions of the program which were poorly paced. Criticism highlighted these points:

1. A high degree of attention was gained in the programs which featured multiple activities in more than one art medium. The program which showed different ways of making prints brought more comments about the high degree of attention in classes than did most of the others.

2. Long reviews of previous week's programs were regarded as too academic for the TV programs by the children in the classrooms.

3. Children became restless when too many techniques were shown without variety in the art media used. This was particularly true of the sixth program, which dealt with drawing problems.

Programs 9 and 10 received the greatest amount of adverse criticism on the questionnaires. These were the two programs on Mexican art. Teachers' reports showed that in each of the two, interest on the part of pupils was aroused late in the programs, rather than at the beginning. Several teachers regarded the programs as below or above the understanding level of their children. It is the writer's opinion that a major cause of this criticism was the inclu-
sion of a lengthy discussion of Mexican art which occupied the first seven or eight minutes on each of the two programs, and during which very little visual material was used. During the last part of the program the children participating in the programs showed examples of Mexican art which they had made. Many teachers also said that program number 9 moved too slowly. Again, this was probably due to the lack of visual materials, and the greater than usual amount of academic discussion.

Summary of the First Evaluation.

A review of the critical reports which the twenty seminar teachers completed each week after viewing the programs indicates that both teachers and pupils found most of the programs very interesting. Teachers felt that the ideas presented on "Art Workshop" could be related to their classroom lessons, and that they provided valuable stimuli for additional activity on the part of the children. They felt that the resources brought to the classroom by TV were those which they were unable to provide. According to the teachers' reports, the programs provided effective learning situations in addition to stimulating additional activity on the part of both teachers and children.

The Second Evaluation Procedure

The first evaluation dealt with the reactions of teachers to individual "Art Workshop" programs: the twenty
teachers included in the special art seminars. The second evaluation procedure attempted to appraise the extent of student interest in the programs, and the effects of the whole series on student interest in art.

Description of Methodology Used

To provide information for this second evaluation, the questionnaire method was used. Each of a group of forty teachers in whose classes the various programs in the broadcast art series were used, was asked to fill out two questionnaires, one approximately two weeks prior to the start of the televised series, and the second two weeks after the series had ended.

Teachers participating in this evaluation included the twenty teachers enrolled in the art seminar, and an additional group of twenty teachers who had requested manuals and information concerning the art series some weeks before the first program went on the air. A total of 990 pupils in the fourth, fifth and sixth grades were in the classes taught by these forty teachers; their evaluations of student interest in the series was based on their observations of these 990 pupils. Table 2, shows the distribution of the 990 children observed, by grades.

The two questionnaires filled out by the forty participating teachers (a copy of the questionnaire is in Appendix B.) were exactly the same. Each asked the teacher to give the number of children whose behavior during classroom art
sessions indicated each of a number of possible levels of interest in art—in the one case, before the art series of television programs began, and in the second, after it had been completed.

**TABLE 2.**

**DISTRIBUTION OF PUPILS WHOSE ATTITUDES TOWARD ART WERE EVALUATED BY THEIR TEACHERS**

<table>
<thead>
<tr>
<th>In classes taught by</th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
<th>Sixth Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five teachers appearing on programs</td>
<td>75</td>
<td>60</td>
<td>27</td>
</tr>
<tr>
<td>Fifteen other seminar teachers</td>
<td>74</td>
<td>166</td>
<td>133</td>
</tr>
<tr>
<td>Twenty non-seminar teachers</td>
<td>172</td>
<td>140</td>
<td>143</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>321</strong></td>
<td><strong>366</strong></td>
<td><strong>303</strong></td>
</tr>
</tbody>
</table>

Each questionnaire included eight specific questions, covering the topics below.

1. The attitude of the children toward art as an activity.
2. The attitude of the children toward the art work they created.
3. The degree of care and concern the children showed for their art materials and equipment.
4. The amount of freedom of movement in the class.
5. The degree of independence the children showed while working in art activity.
6. The children's sense of responsibility toward others in the group, and to the project on group art work.
7. The general atmosphere of the class during art activity.
8. A check question concerning the number of art media used in the classroom prior to and after the series.

After the "Art Workshop" series had ended, data on the two questionnaires were tabulated by the writer for the twenty seminar and twenty non-seminar teachers who had completed the forms, and the results compared. Results of the evaluation forms are presented separately for each of the eight questions used.

Results for the First Question

1. "What was the attitude of the children toward art as an activity before and after "Art Workshop?"

The results of this question are presented in Table 3.

Findings. In the total group of 990 children, the majority liked art activity quite well prior to the series.

TABLE 3.
THE NUMBER OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARIOUS ATTITUDES TOWARD ART AS AN ACTIVITY BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th>Total number of children in classes</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage reported as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking art very much</td>
<td>70%</td>
<td>79%</td>
</tr>
<tr>
<td>Evidencing a mild liking</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Showing indifference</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Evidencing mild dislike</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Disliking art very much</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
However, there was a noticeable increase in the proportion of pupils who liked art very much after exposure to the series. Combining those pupils who liked art very much and those evidencing a mild liking, 86 per cent of the children liked art prior to the series, while 93 per cent were reported as "liking art very much" following the series, an increase of 7 per cent.

These figures represent evaluations made by teachers, of their own pupils. Other factors besides the TV series may conceivably have contributed to this increase in liking for art activity. It is possible that the effectiveness of the classroom teacher herself could have been responsible for such an increase. It is also possible that the teachers doing the evaluating were made conscious of their childrens' attitudes and interests, and worked harder to effect a change. However, regardless of possible causes, the evaluation showed an increase in the proportion of students liking art from 86 per cent before the series to 93 per cent after the art series had ended.

Variations. Within the grades tested, very little variation existed regarding the childrens' attitude toward art. Fourth, fifth, and sixth grade children alike showed a tendency to like art more after the art series than was the case before the series was telecast. Variations between the seminar and the non-seminar groups are presented in Table 4 on the next page.
### Table 4.

PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS EVIDENCING VARIOUS ATTITUDES TOWARD ART AS AN ACTIVITY BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th>Number of children in classes</th>
<th>Seminar Before</th>
<th>Seminar After</th>
<th>Non-Seminar Before</th>
<th>Non-Seminar After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage reported as:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking art very much</td>
<td>66.0%</td>
<td>77.0%</td>
<td>74.0%</td>
<td>80.0%</td>
</tr>
<tr>
<td>Mild liking for art</td>
<td>20.0</td>
<td>16.0</td>
<td>11.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Indifferent toward art</td>
<td>10.0</td>
<td>5.0</td>
<td>7.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Disliking art mildly</td>
<td>2.0</td>
<td>1.9</td>
<td>4.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Disliking art very much</td>
<td>2.0</td>
<td>.1</td>
<td>4.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Only a small difference existed between the seminar and non-seminar groups. The children of the seminar teachers showed less gain in the number liking art following the series than did those taught by the non-seminar teachers. Combining the children "liking art very much" and those showing a "mild liking" for it in the seminar group, 86 per cent were reported as evidencing a favorable attitude before the series, and 93 per cent afterwards. Figures for the non-seminar group were practically the same, with 85 per cent liking art prior to the series, and 95 per cent after it. The seminar group showed an increase of 7 per cent, while the non-seminar group had an increase of 10 per cent. The slight difference might suggest that the information in
Table 3 was not affected to any particular extent by teacher bias.

It is possible that non-seminar teachers may not have been trying as hard to make the series successful as were their seminar colleagues, and perhaps did not emphasize art as much in their classes as the seminar teachers. Seminar children may have heard more art instruction than they wanted.

Summary. The total group of teachers reported a gain among the children in the number liking art activity after the presentation of the art series. This result was found in all three grades in similar degree. Both the children of the non-seminar and seminar teachers showed a gain in liking for art activity following the series.

Results for the Second Question

2. "What were the attitudes of children toward the art work they created before and after the "Art Workshop" series?"

The results for this question are presented in Table 5 on the following page.

Findings. The majority of the 990 pupils observed by teachers reporting liked the art work they had created quite well, placing a certain amount of value on it. There was a noticeable increase in the number of pupils who valued their art products after the series. Combining those pupils who were "mildly pleased" and those who "valued their products
highly", 75 per cent were pleased with their product prior to the series. After the series this combined figure rose to 88 per cent, a gain of 13 per cent for the whole group.

TABLE 5.
PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARIOUS ATTITUDES TOWARD THE ART WORK THEY CREATED BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th>Percentage evidencing:</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>990</td>
<td>990</td>
</tr>
<tr>
<td>Percentage evidencing:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High value for the product</td>
<td>44%</td>
<td>58%</td>
</tr>
<tr>
<td>Mild pleasure with product</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>Indifference toward it</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Very little value for it</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>No value for the product</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

The master teacher made an effort on all of the programs to emphasize the values involved in all types of art activity, and stressed the "worth" of a bit of art work diligently rendered. The increase in number of those children who valued their products more after the series may be due, in part, to this feature of the programs. Other factors would be the emphasis placed on the product by the teacher, and bias on the part of the teachers, who after all, were evaluating their own children, and to an extent, their own teaching
methods. The evidence obtained suggests a rise from 75 per cent to 88 per cent in the proportion of pupils who placed value upon their art work following the art series.

Variations. Among children in the three grades tested, little variation was found from grade to grade in the attitudes of the children toward the art work which they created. All three grades tested showed a similar tendency to place more value on their art work after the series. Variations between the seminar and non-seminar groups are presented in Table 6.

TABLE 6.

PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS SHOWING VARIOUS ATTITUDES TOWARD THE ART WORK THEY CREATED BEFORE AND AFTER EXPOSURE TO THE SERIES

<table>
<thead>
<tr>
<th>Number of children in classes</th>
<th>Seminar Before</th>
<th>Seminar After</th>
<th>Non-Seminar Before</th>
<th>Non-Seminar After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage reported as:</td>
<td>535</td>
<td>535</td>
<td>455</td>
<td>455</td>
</tr>
<tr>
<td>Valuing product highly</td>
<td>36%</td>
<td>62%</td>
<td>49%</td>
<td>54%</td>
</tr>
<tr>
<td>Mildly pleased with it</td>
<td>33</td>
<td>29</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>Indifferent toward it</td>
<td>17</td>
<td>6</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Very little value for it</td>
<td>9</td>
<td>2</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>No value for the product</td>
<td>5</td>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

As the table shows, there was a noticeable difference between the seminar and non-seminar groups. Children observed by the seminar teachers were reported as showing a
greater increase in the value placed on their art product after the series than did those observed by the non-seminar teachers. Seminar teachers showed 69 per cent placing value on their product before the series, and 91 per cent afterwards. The amount of change is greater than that reported for the non-seminar pupils, due to differences in the value placed on the product before the series began.

In the opinion of the writer, this difference could be due to the five teachers in the seminar who participated on the programs, and who had an advantage of Dr. Hausman's presence in the classroom on several visits prior to the programs. He frequently spoke of "the value of the product" in his visits to the classes, and this idea could have remained with the children. These teachers, as well as those in the seminar, heard more about the value of the product than did the non-seminar teachers. It would be natural for them to emphasize this, and be more conscious of it in their observations in class.

Summary. In the total group of children tested, there was a gain in the number placing value on their art products after the series. A similar tendency existed in each of the three grade levels tested. Children in the seminar teachers' classes indicated more gain toward valuing their art products after the series than did those in the non-seminar group. Both groups showed significant gains in the number of children placing value on their art products after the
"Art Workshop" series.

Results for the Third Question

3. "What degree of care and concern do the children show for their art equipment?"

The results for this question are presented in Table 7.

**TABLE 7.**

PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS SHOWING VARYING DEGREES OF CARE AND CONCERN FOR ART EQUIPMENT BEFORE AND AFTER EXPOSURE TO THE ART SERIES

<table>
<thead>
<tr>
<th>Percentage showing:</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>990</td>
<td>990</td>
</tr>
<tr>
<td>Consideration for art equipment</td>
<td>45%</td>
<td>51%</td>
</tr>
<tr>
<td>Some concern for art equipment</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>No concern for art equipment</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Occasional mistreatment of it</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Active mistreatment of it</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Findings.** Most of the 990 children observed by their teachers were careful and considerate with their art equipment both before and after the art series. Before the series 78 per cent of the children showed concern for their equipment. This figure rose to 88 per cent after the series. Thus, there was a net gain of 10 per cent in the number of
children who showed concern for their equipment after the "Art Workshop" series.

A certain amount of emphasis was given on the broadcasts to the care of and the proper way in which to handle art equipment such as brushes, scissors, knives, and other tools of the arts. Abusing materials and equipment was described as wasteful and as a misuse of creative equipment. Some of the improvement in concern for equipment shown by the children in the classrooms using the art series may be a result of this feature of the programs. Whether children actually were more considerate of their equipment, or the teachers wishfully reported they were, is difficult to determine. The rise of 10 per cent could have been caused by the programs or by other stimuli.

Variations. No significant variation existed among the different grades tested on this question. Students in all three grades showed a similar tendency toward some increase in care for equipment following the series. However, variations did exist between the seminar and the non-seminar group as shown in Table 8. As the figures in the table show, teachers in the seminar reported care and concern for art equipment (combining the first two attitudes reported in Table 8) on the part of 79 per cent of their children before the art series, and 86 per cent afterward; a net gain of 7 per cent. For children of the non-seminar teachers the amount of gain was 18 per cent after the series.
This difference is difficult to explain. It was expected that the children of the seminar teachers might evidence a greater degree of care and concern for their art.

**TABLE 8.**

PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS EVIDENCING VARYING DEGREES OF CARE AND CONSIDERATION FOR ART EQUIPMENT BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th></th>
<th>Seminar Before Series</th>
<th>Seminar After Series</th>
<th>Non-Seminar Before Series</th>
<th>Non-Seminar After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in the classes</td>
<td>535</td>
<td>535</td>
<td>455</td>
<td>455</td>
</tr>
<tr>
<td>Percentage showing:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consideration for equipment</td>
<td>39%</td>
<td>48%</td>
<td>47%</td>
<td>52%</td>
</tr>
<tr>
<td>Some concern for equipment</td>
<td>40</td>
<td>38</td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td>No concern for equipment</td>
<td>9</td>
<td>6</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Occasional mistreatment of equipment</td>
<td>9</td>
<td>6</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Active mistreatment of equipment</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

equipment than those of the non-seminar teachers, since they had the benefit of sessions with the master teacher. It is the writer's opinion that seminar teachers might possibly have stressed care for equipment too strongly and so antagonized their children on this point. The evidence may also suggest that the master teacher, in presenting the significant information about care of and concern for equipment on
the television programs emphasized it just enough and in the right manner to impress the children. Seminar teachers may have more honestly reported their children's reactions to the programs than the non-seminar teachers. Whatever the reason, a difference of 11 per cent exists between the two groups.

Summary. In the total group of 990 children tested more children showed care and concern for their art equipment after the series than prior to it. This tendency existed in about equal proportion for the fourth, fifth and sixth grades. Children in the non-seminar teachers' classes showed a larger increase in the percentage showing care and concern for their art equipment than did those in the classes of the seminar teachers. The difference in increase between the two groups was one of 11 per cent.

Results for the Fourth Question

4. "How much freedom of movement is there in the class group?"

Due to misunderstanding of this question by some of the reporting teachers, results were not sufficiently reliable to incorporate in a table. Teachers who interpreted this question correctly indicated that not much change occurred in the amount of movement children were allowed during art activity. Most teachers allowed general movement during the art period, while a few indicated they permitted unrestricted movement.
Results for the Fifth Question

5. "What degree of independence do the children show while working in art activities?"

The results for this question are shown in Table 9.

TABLE 9.
PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARYING DEGREES OF INDEPENDENCE DURING ART ACTIVITY BEFORE AND AFTER EXPOSURE TO THE ART WORKSHOP SERIES

<table>
<thead>
<tr>
<th>Percentage described as:</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely independent</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Seldom seeking aid</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Seeking aid occasionally</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>Seeking aid frequently</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Completely dependent</td>
<td>12</td>
<td>7</td>
</tr>
</tbody>
</table>

Findings. In the entire group of 990 children there were about 5 per cent less who were completely dependent on their teacher for help following the art series than before the series began. Aside from this figure, there were no significant changes in the degree of independence shown by the group as a whole.

Actually, neither of the two ends of the continuum is an
"ideal." The middle of the scale, the child who seeks aid occasionally, represents the desirable attitude here. The small amount of variation before and after the series suggests that the series had negligible effect on the children in this respect. The 5 per cent change in the number of completely dependent children could have been a result of the influence of the teacher alone, or of both the teacher and the series in combination.

Variations. There was no significant difference among the three grade groups tested on this question. All three groups showed little, if any, change.

There was no significant variation between the seminar group and the non-seminar group for this question. Both groups of children showed less dependence upon the teacher following the series, but as in the case of the total group, this change was very slight.

Summary. Children reported by the teachers showed a very slight tendency toward being less dependent on their teachers for help after the series. Fewer children were dependent on their teachers. There was no significant difference among the grades, or between the two groups for this question.

Results for the Sixth Question

6. "On group projects in art, what is the children's sense of responsibility toward others in the group and to the project?"
The results for this question will be found in Table 10.

TABLE 10.
PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING DIFFERENT DEGREES OF RESPONSIBILITY TOWARD OTHERS IN THE GROUP ON ART PROJECTS BEFORE AND AFTER THE ART SERIES

<table>
<thead>
<tr>
<th>Percentage described as:</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>960</td>
<td>960</td>
</tr>
<tr>
<td>Very cooperative</td>
<td>27%</td>
<td>33%</td>
</tr>
<tr>
<td>Quite cooperative</td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td>Indifferent</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Mildly uncooperative</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Very uncooperative</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Findings. In the total group of 960 children reported for this question, there was a slight increase in the percentage of "very cooperative" children after the series. (One teacher failed to answer this question.) Combining replies for those who were "very cooperative" and "quite cooperative", the figure before the series was 79 per cent, and after the series, 87 per cent, a gain of 8 per cent. It should be noted that the great majority of the children tested were "quite" or "very cooperative" both before and after the series.

This small rise in cooperative pupils could be attribu-
ted to the television series, to good teaching by classroom teachers, or perhaps to biased answers on the part of teachers, or to a combination of all three. The increase in the number of cooperative children after the series indicates that some factor, or combination of them must have caused the change during the eleven week period.

**Variation.** There was no significant amount of variation among the three grade groups observed. All three groups showed a small amount of gain in cooperative qualities after the series.

**Summary.** The total group showed some increase in the number of cooperative children after the series. No significant variation existed among grades.

Results for the Seventh Question

7. "What was the general atmosphere of the class during art activity?"

This open-end question elicited all types of answers on both questionnaires. Many teachers failed to answer either time. A summary of the answers that were given by seminar and non-seminar teachers indicates that the classroom atmosphere during art activity was one of relaxation and freedom, with quiet talking allowed in most cases, varying degrees of movement, and in general rather a less formal atmosphere than for other activities. There seemed to be no change after the series. The answers given indicated that children were quite serious about their art work, which perhaps gave
the art activity an industrious atmosphere.

Results for the Eighth Question

8. "How many, and what art media were used by the classes before and after the "Art Workshop" series?"

Results for this question are shown in Table 11.

| TABLE 11. |
| NUMBERS OF ART MEDIA USED IN TEST CLASSES AS REPORTED BY TEACHERS BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES |

<table>
<thead>
<tr>
<th>Number of classes reporting</th>
<th>Before Series</th>
<th>After Series</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of classes reporting</td>
<td>29</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

| Average number of art media used per class | 7.40 | 13.10 | 5.70 |
| Painting and Drawing | 3.00 | 4.00 | 1.00 |
| Printing Processes | .07 | 2.01 | 1.94 |
| Sculpture | 1.05 | 3.02 | 1.97 |
| Construction | 1.01 | 3.02 | 2.01 |
| Other Media | .04 | .07 | .03 |

Findings. As shown in Table 11, there was a definite increase in the number of art media used in the twenty-nine classes reporting, with an average of 7.3 media used in each class before the TV art series began, and of 13.1 following the close of the series. The largest increase reported was
in the use of construction materials. There was indication of a tendency to experiment with a wider range of materials following the art series.

It seems reasonable to assume that the use of new media was largely a result of the art series, since the materials listed in Table 11 were all used on the "Art Workshop" programs. Some experimentation with new materials might have resulted without the series. It is doubtful, however, whether teachers would have used these specific media to such a large extent without the stimulus of the televised programs.

Variations. All grades tested indicated use of the various art media listed during the course of the series, and all grades showed growth in the use of new media. There was no significant variation among the three grades. Similarly, there was no significant variation between the seminar and non-seminar groups in the increase in the use of number of art media following the series.

Summary. There was definite indication that more art media were used after the series than before it. The largest gains were found in the use of construction materials. The data provided suggest that the series stimulated the use of new materials, as well as new applications for familiar materials. It is doubtless true that students in viewing classrooms used a greater variety of art media simultaneously after the series than they did before it.
Summary of the Second Evaluation

The results of the observation of 990 fourth, fifth, and sixth grade children reported by forty teachers two weeks prior to the "Art Workshop" series and again two weeks following it indicate that the telecasts had measurable effects on the interests of the viewing children. There was a noticeable increase in the number of children who placed value on their art products after the series, as well as in the proportion of children who liked art activity. Similarly, there was a rise in the number of art media used in the participating classrooms. The check on specific art media revealed that art materials used on the television programs were used and experimented with in the classrooms after the programs.

Teachers pointed out in the first evaluation that the programs stimulated their pupils to art activity. The second evaluation, tends to substantiate these earlier findings. It is possible that the extra stimulation provided by the television programs could account, in part, for the increase in liking for art activity found in the second evaluation. It seems reasonable to assume that a relationship might exist between increase in liking for art activity and the stimulus provided by the televised programs. There is a certain degree of significance in the fact that children in the viewing classes observed used a greater variety of art materials during art activity after the series than prior to
it, and that the materials so used were largely the same as those used on the programs by the master teacher and the children who appeared before the cameras.

Certain weaknesses were inherent in the method used in the second evaluation. Teachers were asked to observe their children while engaged in art activity for two weeks prior to the series, and again two weeks after the series. The teachers were expected to determine by this observation the children's attitudes toward art. No actual direct information was obtained from the children. Thus, the information was obtained wholly from reports by the teachers.

The method is subject to bias on the part of the teachers, half of whom helped plan the series. It is likewise subject to chance differences. The reliability of the information depends upon the degree of accuracy with which these forty teachers were able to observe and detect the attitudes and interest of their pupils toward art on two different occasions. Allowance should be made for the fact that each teacher may have been evaluating slightly different things in her children. No control group was used, and no attempt was made to match the groups involved other than to make sure that a similar number of each of the intermediate grades was represented.

Originally, it was hoped to use trained observers in the classrooms to check the attitudes and reactions of the teachers and the children to the programs, and to art activity. This proved impractical because insufficient
time was available to train the observers properly, and insufficient funds were available to secure the observers.

The alternative was to let the classroom teachers describe the attitudes and interests of the children in their own classrooms. Several reasons prompted use of this plan:

1. The classroom teacher, even better than a trained observer knows the likes and dislikes of her children. Strangers entering the classrooms might have been more objective, but would not have been able to know as much about the attitudes and interests of the children as the teachers.

2. Teachers were available and willing to help in the study.

3. Using teachers as observers would keep the class situation a normal one, whereas the use of non-teacher observers would introduce a novelty factor to the situation.

4. Since teachers were using the series, it was felt their reactions and opinions would be of value.

It seems significant to the writer that both the seminar and non-seminar teachers reported very similar results with respect to six of the eight questions asked on the questionnaire, and that differences on the remaining two questions were not particularly large. It is interesting to note that the results of the second evaluation bear relationship to those of the first evaluation.

Within the limitations imposed by the techniques used to secure the data, it is the opinion of the writer that the "Art Workshop" television programs had an appreciable effect
on the interests of the children who viewed them, although other factors were undoubtedly present which could also have influenced their interests and attitudes.

The Third Evaluation Procedure

The first evaluation sought the teacher's reactions to individual "Art Workshop" programs. It used questionnaire reports from twenty seminar teachers. Concerned with the effect of the series on the attitudes and interest of the series on the intermediate grade children, the second evaluation also used the questionnaire method, in which forty teachers observed the behavior of their children during art activity before and after the series and reported them to the writer. As in the preceding evaluations, the third evaluation was based on reports given by teachers. The third evaluation was a study of the effects of the series on the interests of the teachers who observed their children in the previous evaluation.

Description of Methodology Used.

The third method of evaluation used a questionnaire to be filled out by teachers using the television series in art, to secure information concerning the extent and nature of the influence of the "Art Workshop" series on the teachers themselves, who used it in their classrooms.
Each teacher filling out a questionnaire was asked to give information concerning:

1. Her concept of art education.

2. Her classroom management, which included:
   a. The amount of time provided by the teacher for art activities.
   b. The materials provided for art activity.
   c. The teacher's ability to handle more than one art medium or activity at one time.
   d. The planning techniques used.
   e. The method the teacher used to evaluate her children's art work.

Two weeks before the first broadcast in the art series was scheduled to go on the air, a questionnaire was sent to each of the twenty seminar teachers and to forty other teachers who had indicated an interest in the series, asking for information about the methods used by the teachers in handling art activities in their classrooms. Usable questionnaires were returned by all of the seminar teachers, and by eighteen of the others to whom materials had been sent.

Then, two weeks following the completion of the art series, an identical questionnaire was sent to the thirty-eight who had returned the first form. Of these, thirty-two returned usable questionnaires---the twenty teachers enrolled in the special art seminar, and twelve non-seminar teachers. The material in the third evaluation is based on the information provided before and after the broadcast series by these thirty-two teachers.
The questionnaire used asked for "discussion type" answers to questions in six areas. (A copy of the questionnaire used appears in Appendix B.) The information provided was of such a nature as to make tabulation of results impossible. Results of the evaluation are presented separately for each group of questions asked in the sections that follow.

Results of the Third Evaluation

Results for Section A. Questions which dealt with the amount of time the teachers using the art series devoted to art activity were included in this section of the questionnaire.

The time devoted to art activity in the classroom by the teachers using the television series in art was definitely increased following the series. Of the thirty-two teachers reporting, twenty-three reported increased time devoted to classroom art activities after the series. The average increase for each of these twenty-three teachers was about fifty minutes per week, or 60 per cent of the average amount of time used before the "Art Workshop" series began. A greater increase was reported by the twelve non-seminar teachers than by those in the seminar, but this difference was not large.

Results for Section B. This section asked questions concerning classroom management, and the use of art materials.
All of the thirty-two teachers reported the use of a greater variety of art materials after the "Art Workshop" series, than before. All indicated experimentation with art materials used on the television programs. Teachers indicated that children were permitted free access to art materials during art activity periods, with some increased tendency to allow more movement in the classroom after the series. Twenty-one of the thirty-two teachers reported an increased use of a variety of art materials during the same class session after the art series. Similarly, the same teachers were found after the series, to permit art activities to be carried on by pupils while other subject matter was being considered in the classroom. This was equally true for the seminar and non-seminar teachers reporting.

Results for Section C. This section asked questions concerning the planning of art activities.

Methods used by the teachers for pre-planning art activity showed some changes after the art series. Of the thirty-two teachers reporting, nine said that after the television series they brought the children into the planning to a greater extent than before. More democratic techniques in the planning of art activities was shown by 58 per cent of the thirty-two teachers after the series. Similarly, the sources for ideas were more varied after the series in about 30 per cent of the cases.

Over half of the teachers indicated that new ideas were used for art activities after the art series. About 63 per
cent of the teachers reported that television could be a means of stimulating art activity following the series. There was very little difference between the seminar and non-seminar teacher groups in the reports for this section.

**Results for Section D.** Questions in this section dealt with problems related to the copying, by students, of the art product of others.

The reaction of the teachers to copying the art work of other persons showed a slight change after the art series, with teachers showing that they felt copying was undesirable and without value. Seminar and non-seminar teachers gave similar reports for this question, showing a tendency to encourage less copying after the series.

**Results for Section E.** This section asked questions dealing with the activities of the teacher during periods of art activity in the classroom.

Of the thirty-two teachers reporting, twenty-six indicated that following the "Art Workshop" series, they used new and additional techniques to aid their children with art activities. A larger proportion of seminar teachers reported changes than of non-seminar teachers. The most frequently mentioned new technique was that of "giving specific comments related to the art work of each child" by the teacher. This was aimed at building up the confidence of the child in his own creative ability.

Twenty-two of the thirty-two teachers reported that they felt better able to judge and evaluate their childrens' art
work after the television series than before the series was on the air. New techniques used after the programs showed increased concern in the interest of the child in his product, his satisfaction with it, and the attainment of specific goals set up by himself. There was considerably less emphasis by teachers on neatness and originality. Generally, the teachers judged the work of their children more on the attainment of specific goals, imaginativeness, willingness to experiment and do research, and the effective use of materials after the series than they had prior to it. This was equally true of seminar and non-seminar teachers.

**Results for Section F.** In this section of the questionnaire, the teacher was asked to name five or six reasons why art should be included in the upper elementary grades.

The thirty-two teachers' answers to this section generally indicated a broader concept of art activity after the "Art Workshop" series, particularly for the seminar teachers. Only four teachers mentioned "decor of the classroom" or "release of extra energy" as a reason following the series, although fourteen of the thirty-two had done so prior to the series. Most post-series reasons of both groups included one or more of the following: "for self expression and creativity," "a means of stimulating interest in other units of work," "helping children visualize their ideas," and "to stimulate social growth through creative experiences."

Seminar teachers showed a greater variety of new reasons for including art activity in the upper elementary grades
than the non-seminar teachers; however, the difference was slight.

Summary of the Third Evaluation

The study of the effect of the "Art Workshop" telecasts on the interests and attitudes of thirty-two teachers provides evidence that the art telecasts contributed to some changes in teaching methods and the attitude of the teachers who used the programs in their classrooms. Some rather definite changes occurred in the interests and attitudes of the thirty-two teachers following the "Art Workshop."

Both the general concept of the function of art education and concepts of how art should be taught showed change in the case of over half of the thirty-two teachers after the series. Two-thirds of the teachers reported a definite increase in the amount of time devoted to art activity. Most of the teachers reported an increase in the number of art media and materials used. Planning of art activities became a more democratic process following the series, with sources of ideas for art activity becoming more varied in most of the classes.

It is significant that 80 per cent of the reporting teachers declared after the series that they were better able to judge and evaluate the art work of their children. It is significant especially because this was an area in which the majority of teachers prior to the series, considered themselves poorly qualified. The information secured indicates
that the programs in art were of value to the teachers as an in-service training device as well as a supplementary aid to art instruction.

It is possible that the increased interest of the teachers in art activity, coupled with increased confidence to work in the activity effectively, may bear relationship to findings of the first and second evaluation. Children became more interested in art activity, used new materials, and were stimulated to art expression in greater numbers after the series. The increased amount of time spent in art activity, the use of more democratic techniques for planning used by the teacher, and the extra help which the teacher was able to give in evaluation, might have furthered the interest of the children in art. It also may have made art activity more relaxed and pleasant for everyone involved.

However, the method used in the third evaluation may be open to criticism. Information was secured from the teachers by means of a questionnaire. Teachers were asked to analyze their own feelings about art as a classroom activity, and in effect to evaluate their own teaching methods in this subject area. The extent to which the teachers were able to maintain objectivity in their analyses would naturally affect the reliability of the answers. Teachers too, are human beings; it is possible they gave answers which they would have liked to be able to report, rather than the actual facts. It is interesting to note, however, that the information reported by the teachers in
the seminar who helped plan the programs and those in the non-seminar group who did not, were very similar.

It is significant that the changes in teaching methods and in the interests of the thirty-two teachers studied bear relationship to the changes in the interest and degree of liking for art activity found for the children in the second evaluation.

The Fourth Evaluation Procedure

Previously mentioned evaluations of the "Art Workshop" series have dealt with the reactions of teachers to individual programs, their conclusions concerning the effects which the series had on the interests of pupils using the art telecasts, and the effects of the series on methods used by the teachers themselves. The fourth evaluation procedure consisted of a general appraisal of the series of programs taken as a whole, made by each of a group of seventy-three teachers who had viewed the "Art Workshop" programs with their classes.

Description of Methodology Used

The fourth evaluation used the questionnaire technique to obtain the reactions of the seventy-three teachers who had viewed the programs with their classes to the "Art Workshop" series as a whole. The questionnaire asked for both general and specific comments about the series that
would be useful to the staff of the Ohio School of the Air in the planning of future classroom telecasts. Thirteen questions were asked on the form, some calling for completion-type answers, some multiple choice, and some for "yes" and "no" answers. The questionnaire included questions dealing with set ownership in the schools, the number of programs viewed by the teachers, reactions of the teachers to ideas used on the programs, the teachers' estimates of the educational value of the series, the ways in which the teachers found the series helpful to them, benefits which the children obtained from the series, the degree of effectiveness of the children appearing on the programs, and the programs which were best liked and least liked in the series. (A copy of the questionnaire used is found in Appendix B.)

Questionnaire forms were mailed to a sample of one hundred teachers who had used the series, chosen at random from the mailing list for the teachers' manuals. The forms were mailed two weeks after the close of the series. Fifty-four usable completed questionnaires were returned by the non-seminar teachers who had used the programs; nineteen additional completed questionnaires were turned in by the seminar teachers. This brought the total usable questionnaires to seventy-three.
Findings of the Fourth Evaluation

The results of the information provided by seventy-three teachers for the "Art Workshop" series as a whole will be taken up on a question by question basis.

Set Ownership in the Schools. Of the seventy-three teachers reporting, 88 per cent replied that schools they represented had one television set; 2 per cent had two or more sets; 10 per cent had no sets. Schools not owning sets had borrowed them from dealers or parents during the series. Of the receivers owned by the schools, the most popular screen size was twenty-one inches, with 72 per cent of the teachers reporting use of sets of this size for viewing. The remaining 28 per cent used seventeen-inch screen sets. None of the teachers reported difficulty in the use of either of these two sizes of receivers in their classrooms.

The Number of Programs Viewed. The teachers reporting watched a high percentage of programs with their classes. Of the seventy-three teachers, 88 per cent watched all eleven of the programs, 8 per cent watched ten, and 4 per cent watched only nine.

Teachers' Reactions to the Ideas Used in the Series. The results for this portion of the study are shown in Table 12.

The majority of the teachers reporting indicated that they were able to use the ideas presented on the series in their classrooms. More of the seminar teachers were able
TABLE 12.
REACTIONS OF SEMINAR AND NON-SEMINAR TEACHERS TO THE IDEAS USED ON THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers reporting</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Percentage reporting they</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were able to use ideas in classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly</td>
<td>100%</td>
<td>59%</td>
</tr>
<tr>
<td>To some degree</td>
<td>--</td>
<td>41</td>
</tr>
<tr>
<td>Not at all</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Found ideas of programs related to classwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly</td>
<td>93%</td>
<td>59%</td>
</tr>
<tr>
<td>To some degree</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>Not at all</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

to use the ideas than non-seminar teachers. However, it is interesting that a large percentage of the non-seminar teachers reported that they were able to relate the ideas from the series to the activities in their classes.

It is the opinion of the writer that seminar teachers were able to use more of the ideas in their classes than their non-seminar colleagues because they were a part of the planning and organizing of the programs. This gave them an opportunity to plan ahead, and to anticipate certain variations in their class work. Naturally, the non-seminar
teachers did not have this opportunity.

The Educational Value of the Series as a Teaching Aid.
The results of this portion of the questionnaire are shown in Table 13 below.

TABLE 13.
EDUCATIONAL VALUE PLACE ON "ART WORKSHOP" SERIES AS A TEACHING AID BY SEMINAR AND NON-SEMINAR TEACHERS

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers reporting:</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Percentage rating the series as</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>77%</td>
<td>30%</td>
</tr>
<tr>
<td>Very Good</td>
<td>23</td>
<td>41</td>
</tr>
<tr>
<td>Average</td>
<td>--</td>
<td>29</td>
</tr>
<tr>
<td>Fair or Poor</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The majority of teachers reporting indicated that they felt the television series had been an excellent or at least a very good teaching aid. Teachers in the seminar group rated the value of the series higher than did those in the non-seminar group.

The writer believes that the difference between the seminar and non-seminar groups can be explained by the greater amount of contact which the seminar teachers had with the master teacher in the planning sessions. Some carry-over was bound to occur. It is interesting, however,
that 71 per cent of the non-seminar teachers considered the series as either "very good" or "excellent" as a teaching aid, and none thought it to be "poor" or "fair" in this respect.

Educational Value of the Series as a Means of Enriching The Art Curriculum. The results for this part of the questionnaire are shown in Table 14.

TABLE 14.
EDUCATIONAL VALUE PLACED ON "ART WORKSHOP" SERIES AS A MEANS OF ENRICHING THE ART CURRICULUM BY SEMINAR AND NON-SEMINAR TEACHERS

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of teachers reporting:</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Percentage rating the series as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>84%</td>
<td>35%</td>
</tr>
<tr>
<td>Very Good</td>
<td>15</td>
<td>65</td>
</tr>
<tr>
<td>Average</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Fair or Poor</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Practically all of the seventy-three teachers reporting considered the television series an "excellent" or "very good" means of enriching the art curriculum. The seminar teachers again rated the series higher in value than did their non-seminar colleagues. It is the writer's belief that this difference may be due to bias on the part of the
seminar teachers, or the fact that they worked more closely with the series, and therefore found more value in this application.

Ways in Which the Teachers Found the Series Helpful. The sixth question asked teachers to check as many of the answers on the form as they felt expressed their opinions as to how the series had been of help to them. Table 15 shows the results for this question.

**TABLE 15.**
WAYS IN WHICH SEMINAR AND NON-SEMINAR TEACHERS WHO USED THE "ART WORKSHOP" SERIES FOUND IT TO BE HELPFUL TO THEM

<table>
<thead>
<tr>
<th>The number of teachers reporting:</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>The percentage stating the series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided a wider background of art information</td>
<td>84%</td>
<td>76%</td>
</tr>
<tr>
<td>Stimulated pupils to art work</td>
<td>93</td>
<td>88</td>
</tr>
<tr>
<td>Helped pupils develop a critical sense toward art</td>
<td>46</td>
<td>55</td>
</tr>
<tr>
<td>Brought art resources the teacher couldn't provide</td>
<td>77</td>
<td>71</td>
</tr>
<tr>
<td>Aided teacher in art evaluation</td>
<td>70</td>
<td>47</td>
</tr>
<tr>
<td>Provided useful supplementary information for the class</td>
<td>92</td>
<td>88</td>
</tr>
</tbody>
</table>

The percentage of teachers stating that the programs were of specific aid to them is quite similar for both groups. A
very high percentage of the seventy-three teachers reporting indicated that the series was helpful first by providing useful supplementary information for the class: second, in stimulating the pupils to art expression, and third, by providing a wider variety of background information in art than would otherwise have been available. Differences between the seminar and non-seminar groups were slight.

Benefits the Children Received from the Series. The questionnaire sought in this portion, to find out if the teachers had observed any changes in their children's attitudes toward art as an activity. The results are shown in Table 16.

The seventy-three reporting teachers were generally agreed that the children showed an increased interest in art, an increased ability to use a variety of art media, and an increased ability to see the relationship of art to daily living, after using the televised series. Most of the teachers also believed that the series tended to develop in the children an increased appreciation for their art products and for art forms in general, as well as an increase in imagination and creativity in art work.

Value of the Children Appearing on the Programs. One section of the questionnaire related to the appearance of children on the television programs. The teachers were asked the question, "On the basis of pupil reaction, did the children appearing on the "Art Workshop" programs add
<table>
<thead>
<tr>
<th>Benefit</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>To</td>
</tr>
<tr>
<td>Increased sensitivity to art</td>
<td>76%</td>
<td>23%</td>
</tr>
<tr>
<td>Increased interest in art</td>
<td>84</td>
<td>15</td>
</tr>
<tr>
<td>Increased appreciation for their art products</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Increased ability to use a variety of art media</td>
<td>93</td>
<td>7</td>
</tr>
<tr>
<td>Increased appreciation for art forms</td>
<td>61</td>
<td>30</td>
</tr>
<tr>
<td>Increased imagination and creativity in art work</td>
<td>76</td>
<td>15</td>
</tr>
<tr>
<td>Increased ability to see visual relationships</td>
<td>53</td>
<td>38</td>
</tr>
<tr>
<td>Increased ability to see relationship of art to daily living</td>
<td>54</td>
<td>30</td>
</tr>
</tbody>
</table>
to the general effectiveness of the series?" Seminar and non-seminar teachers voted about the same on this question, with about 93 per cent replying "Yes." More specific reasons were sought by means of a check system, in which four possible values were suggested. Teachers were to check only the values which they felt appropriate. Table 17 indicates how the teachers replied to this part of the questionnaire.

TABLE 17.
WAYS IN WHICH SEMINAR AND NON-SEMINAR TEACHERS FOUND THE CHILDREN APPEARING ON THE TV PROGRAMS TO BE OF VALUE

| Provided a sense of participation for the classroom children | 92% | 82% |
| Provided identification for the classroom children | 92 | 58 |
| Added variety and real classroom atmosphere to the programs | 90 | 85 |
| Gave classroom children confidence to try art work | 100 | 77 |

Most of the teachers reporting felt that the children added to the programs by providing a sense of participation for the classroom viewers. Almost equal percentages from
both groups of teachers felt that the children on the programs were effective in adding variety and a real classroom atmosphere to the programs. Differences were evident in the observations of seminar teachers and non-seminar teachers with respect to the other suggested values, though a majority of both groups regarded all four values as real.

**Evaluation of the Art Series as a Whole.** Another question asked for information about what the teachers thought of the "Art Workshop" series taken as a whole. From a list of eleven statements, describing various possible reactions to the series, each teacher was asked to check those statements which she felt were appropriate. Table 18 shows how the teachers replied.

Two-thirds of the seventy-three teachers completing the questionnaire felt that the series fulfilled the objectives stated for it in the teachers' manual. Almost all felt that it had helped them in their art instruction. Most of the teachers felt that the series had been of permanent value to their classes as "background enrichment" and in "improving attitudes toward art." Some variation existed between the seminar and non-seminar groups on "specific education" provided, and "stimulation of individual research and exploring in Art", with the seminar group giving the higher ratings.

It is the opinion of the writer that these differences could, again, be due to the fact that seminar teachers had
TABLE 18.
SEMINAR AND NON-SEMINAR TEACHERS' EVALUATION OF THE "ART WORKSHOP" SERIES TAKEN AS A WHOLE

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers reporting:</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Percentage feeling that &quot;Art Workshop&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fulfilled objectives stated in the teachers' manual</td>
<td>84%</td>
<td>71%</td>
</tr>
<tr>
<td>Helped in the art instruction</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>Contributed very little</td>
<td>7</td>
<td>--</td>
</tr>
<tr>
<td>Was below maturity level of class</td>
<td>--</td>
<td>6</td>
</tr>
<tr>
<td>Was above maturity level of class</td>
<td>--</td>
<td>6</td>
</tr>
<tr>
<td>Was only of passing value to class</td>
<td>--</td>
<td>11</td>
</tr>
<tr>
<td>Was of permanent value to class as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific education in art</td>
<td>69</td>
<td>35</td>
</tr>
<tr>
<td>Background enrichment</td>
<td>84</td>
<td>71</td>
</tr>
<tr>
<td>Improvement in art attitudes</td>
<td>92</td>
<td>58</td>
</tr>
<tr>
<td>A stimulant of individual research and exploration in art</td>
<td>77</td>
<td>61</td>
</tr>
</tbody>
</table>

closer contact with the master teacher, and with other teachers in the seminar, which doubtless made the series
more valuable to them in specific education.

**Programs Which Were Liked Most and Least.** In rating reactions of students to individual programs in the series, all of the seventy-three teachers said their children liked program number four best of all. (It demonstrated how to make puppets and marionettes.) The fifth program (a second program dealing with puppets and marionettes) was rated by the majority as second best liked. The seventh program, dealing with sculpture and 3-D art objects was third in order of preference.

Programs 10 and 11, which dealt with Mexican Art were unanimously voted the least well liked by both the seminar and non-seminar teachers. The second program, which covered Murals and Mobiles, was voted next poorest, and program number 6 on Drawing and Painting Techniques was rated third lowest. The Mexican Art programs lacked action and visual material in the early portions, and were considered "above the maturity level of the children" by many of the teachers. The program on murals and mobiles was criticized because of inability of students viewing the program to see the mobiles clearly, and the fact that the colors on the mural reproduced poorly on television. Program 6 seemed to have failed to make a favorable impression with the teachers and children because it dealt with items already covered in most of the classes, and was lacking in action.

**Interest in Future Classroom Television Programs.** One hundred per cent of the teachers reporting stated that they
wanted another series of television programs in art the following fall, and all of the teachers stated that their children enjoyed the television programs.

Summary of the Fourth Evaluation

Seeking the reactions of seventy-three teachers to the "Art Workshop" series taken as a whole, the fourth evaluation discovered that the majority of the teachers reporting felt that the programs had been of value to them both as a means of enriching the art curriculum at the intermediate level, and as a supplementary teaching aid. Most of the schools involved in the study owned television receivers; those not owning sets borrowed them, or rented them from television dealers. Over 85 per cent of the teachers watched all of the programs with their classes and well over half of the seventy-three teachers reported the series had met the objectives which were stated in the "Art Workshop" teachers' manual.

The fourth evaluation found that teachers using the "Art Workshop" series were favorably impressed with television as a teaching aid in the classroom. Findings of the fourth evaluation bear relationship to other findings of the first, second, and third evaluations.

1. Teachers were able to use the ideas presented on the TV programs in the classes.

2. The programs stimulated pupils to art expression.
3. There was an increased interest in art for pupils and teachers.

4. Teachers felt that the educational value of the "Art Workshop" series was high.

Programs 10 and 11, which were more slowly paced than others, and which contained more discussion than demonstration, were voted the least well-liked by the teachers of both the seminar and non-seminar groups. Program number 4, which dealt with marionettes and puppets was a unanimous choice for the program best liked. This program contained a variety of good three dimensional visual material, plenty of activity, and an interesting story line.

It seems significant to the writer that both groups of teachers placed a high value on the art programs, and showed strong interest in continuing classroom telecasts in art to the intermediate grades another year.

The Fifth Evaluation Procedure

The preceding four evaluations of the "Art Workshop" series have been concerned with the reports and observations of teachers. Although the second evaluation measured the effect of the series on the interests of the children, the information was gained by reports of observations made by the teachers. No direct reports have been included from the intermediate grades children. The fifth evaluation procedure was therefore included in the study in order to
provide an appraisal of individual programs in the "Art Workshop" series, based on the direct responses of fourth and fifth grade children who had seen the programs in the series.

A Description of the Methodology Used.

This portion of the study tried to find out how well the children liked the programs, and whether the series had any effect on them. Mrs. Julia R. Gump, a graduate student of the elementary education department of Ohio State University, who was also teaching at the North Linden Elementary School in Columbus, collected the data for this part of the study. She had the cooperation of two other elementary teachers in the North Linden School. The writer assisted with the development of the questionnaires and aided with the tabulation of the results.

One group of fourth grade children and one group of fifth grade children from the North Linden School were involved in this part of the study. Thirty-seven children in the fourth, and thirty-two children from the fifth grades were chosen. North Linden was selected because Mrs. Gump was employed there and was able to make necessary arrangements.

The procedure was as follows: immediately after each art program the children in the two groups viewing the programs were given a rating sheet in their classes. (A copy
of the rating sheet is in Appendix B). Children were asked on this rating sheet to rate the programs in terms of their reaction to program content, development of ideas presented, timing, and materials or aids used. The questions were read to the children by their teachers and explained, so that no child would have difficulty in understanding the questions. This procedure was used throughout the series.

At the end of the series, the children were asked to evaluate the series taken as a whole, using a special questionnaire which they took home to complete. This was done to escape possible influence by others in the class. The children were also asked to select the television program in the series which they liked most, and the one which they liked least of all. (All forms used for series evaluation are found in Appendix B.).

Findings of the Fifth Evaluation

Findings of the evaluation are presented in four parts.

Evaluation of the Individual Programs. This portion of the study sought children's reactions to individual programs in the series. Table 19 on the following page presents the results of this part of the study.

The table indicates a wide variation in the response of children to individual programs. Generally, the children thought their television lessons in art very interesting from the opening of each program. The timing of the programs
TABLE 19.
FOURTH AND FIFTH GRADE CHILDREN'S EVALUATION OF INDIVIDUAL "ART WORKSHOP" TELEVISION PROGRAMS

<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Reporting:</td>
<td>65</td>
<td>66</td>
<td>67</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td>71</td>
<td>66</td>
<td>75</td>
<td>69</td>
<td>74</td>
</tr>
<tr>
<td>Percentage stating program was:*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>very interesting</td>
<td>77</td>
<td>69</td>
<td>75</td>
<td>69</td>
<td>71</td>
<td>23</td>
<td>57</td>
<td>60</td>
<td>64</td>
<td>45</td>
<td>75</td>
</tr>
<tr>
<td>interesting</td>
<td>16</td>
<td>19</td>
<td>9</td>
<td>22</td>
<td>19</td>
<td>30</td>
<td>23</td>
<td>21</td>
<td>23</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td>good</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>40</td>
<td>14</td>
<td>11</td>
<td>8</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>fair or poor</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>They liked the program from the start</td>
<td>58</td>
<td>60</td>
<td>61</td>
<td>63</td>
<td>63</td>
<td>32</td>
<td>53</td>
<td>50</td>
<td>49</td>
<td>49</td>
<td>74</td>
</tr>
<tr>
<td>later in program</td>
<td>42</td>
<td>33</td>
<td>30</td>
<td>33</td>
<td>32</td>
<td>62</td>
<td>40</td>
<td>39</td>
<td>42</td>
<td>45</td>
<td>25</td>
</tr>
<tr>
<td>at no time</td>
<td>0</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>The program was paced</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>just right</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>too slowly</td>
<td>83</td>
<td>96</td>
<td>86</td>
<td>85</td>
<td>95</td>
<td>76</td>
<td>66</td>
<td>76</td>
<td>87</td>
<td>77</td>
<td>84</td>
</tr>
<tr>
<td>too rapidly</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>12</td>
<td>3</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>unevenly</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>8</td>
<td>0</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>The pictures showed up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>very clearly</td>
<td>49</td>
<td>43</td>
<td>40</td>
<td>59</td>
<td>57</td>
<td>24</td>
<td>57</td>
<td>63</td>
<td>57</td>
<td>45</td>
<td>66</td>
</tr>
<tr>
<td>very good</td>
<td>29</td>
<td>28</td>
<td>30</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>21</td>
<td>12</td>
<td>22</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>good</td>
<td>12</td>
<td>20</td>
<td>15</td>
<td>14</td>
<td>18</td>
<td>40</td>
<td>15</td>
<td>20</td>
<td>13</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>fair</td>
<td>6</td>
<td>7</td>
<td>14</td>
<td>4</td>
<td>3</td>
<td>13</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>poor</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
was about right for them to follow the ideas which were presented. There was no indication that they were bored. Reactions for the fourth and fifth grade groups seems to be very similar in most respects.

The criticism and evaluation of these sixty-nine children is quite similar to those reported by the seminar teachers in the first evaluation.

Evaluation of the Total Series by the Children. This concerned the evaluation of the series taken as a whole by the sixty-nine children in the fourth and fifth grades. Table 20 shows the results.

TABLE 20.
THE RESPONSES OF FOURTH AND FIFTH GRADE CHILDREN TO THE STIMULUS OF THE TV SERIES TO TRY NEW IDEAS IN ART AT HOME

<table>
<thead>
<tr>
<th>Number of children reporting:</th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage replying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;I tried new art ideas&quot;</td>
<td>96%</td>
<td>84%</td>
</tr>
<tr>
<td>&quot;I did not try new ideas&quot;</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>No response</td>
<td>--</td>
<td>4</td>
</tr>
</tbody>
</table>

As Table 20 shows, over 85 per cent of the reporting children in the fourth and fifth grades were stimulated to try new ideas at home, and did more reading about art at home after seeing the television series. Fourth grade
children were somewhat more stimulated in these ways than were those in the fifth grade.

**Programs the Children Liked or Disliked.** Children in the test group were also asked to point out the programs they liked most and the ones they liked least in the series. Table 21 shows the results for this question.

The fourth program, which dealt with Puppets and Marionettes was by far the best liked program of the eleven. Program number 10, which dealt with Mexican art was second in the number of first choices. However, this same program was also rated as liked least by more of the children than gave such a rating to any other program. The selections made by these fourth and fifth grade children are very similar to those given in the fourth evaluation by the seventy-three teachers, whose reports reflected the likes and dislikes of students in their classes. Puppets and Marionettes seemed universally popular, with Mexican Art producing the highest number of negative votes.

**Children's Measure of Regard for Their Art Products.** Prior to the start of the series, the children in the special test group were asked to reply to a list of six questions asking what each did with his art work or finished art products when completed. Two weeks after the final program in the series, the same students were again asked the same set of questions. The results of this portion of the study are shown in Table 22.
**TABLE 21.**

"ART WORKSHOP" PROGRAMS WHICH THE FOURTH AND FIFTH GRADE CHILDREN AT THE NORTH LINDEN SCHOOL LIKED AND DISLIKED

<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Reporting:</td>
<td>69</td>
<td>70</td>
<td>68</td>
<td>69</td>
<td>71</td>
<td>72</td>
<td>71</td>
<td>69</td>
<td>68</td>
<td>73</td>
<td>68</td>
</tr>
<tr>
<td>Percentage stating they liked the program best*</td>
<td>5</td>
<td>5</td>
<td>12</td>
<td>28</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>26</td>
<td>3</td>
</tr>
<tr>
<td>Percentage stating they disliked the program most</td>
<td>5</td>
<td>22</td>
<td>0</td>
<td>12</td>
<td>21</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>23</td>
<td>5</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
TABLE 22.

DEGREE OF REGARD SHOWN BY FOURTH AND FIFTH GRADE CHILDREN FOR THEIR ART PRODUCTS BEFORE AND AFTER EXPOSURE TO THE "ART WORKSHOP" SERIES

<table>
<thead>
<tr>
<th>Children Reporting</th>
<th>Before Series</th>
<th>After Series</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>69</td>
<td>69</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question asked</th>
<th>Average &quot;Ratings&quot;a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you take your art work home?</td>
<td>3.4</td>
</tr>
<tr>
<td>2. Do you display it at home?</td>
<td>3.2</td>
</tr>
<tr>
<td>3. Do you like to have it shown at school?</td>
<td>4.0</td>
</tr>
<tr>
<td>4. Do you show your art work to others?</td>
<td>3.6</td>
</tr>
<tr>
<td>5. Do you keep your art work?</td>
<td>3.6</td>
</tr>
<tr>
<td>6. Do you ask others in class what they think of your work?</td>
<td>3.0</td>
</tr>
</tbody>
</table>

a The figures represent averaged ratings of the sixty-nine children for each of the questions.

The children rated the degree of regard they had for their own art work, rating each question on a five point scale. The scale was set with the following values:

5....Always
4....Often
3....Sometimes
2....Hardly Ever
1....Never
As the table shows, there was no significant difference in the apparent attitudes of the children tested toward the products of their art work, before and after the series. Individuals reported changes, but not the group as a whole.

Comments of the Children Concerning the Programs. Of some significance were the comments which the children made in letters written to the master teacher and to the writer of this paper. The notes and letters were both complimentary and critical. Undoubtedly this little girl expressed the feeling of other classmates when writing this letter:

Dear Mr. Hausman,

I like your art programs very much. I liked your show where you had a puppet show and I also liked the show when you had a display of Easter hats. I don't think your children speak loud enough or plain enough. Your materials don't show up too clearly sometimes. And I think you discuss the program too much.

We tried making many of the things you showed us in our classroom. I am working on wire sculpture now.

Sincerely yours.

A fifth grade boy referred to new insights which he had gained in art when he wrote:

......"I liked the puppets and printing and drawing demonstrations, they are very interesting.

I used the ideas you gave us about drawing and found out that it made my drawings look more realistic.

Yours truly.

And a fourth grade girl wrote:

......"My name is ______. I go to the N. Linden School. I enjoyed all of your programs very much.
I can't decide which one I liked best, I liked something out of each show.
We have done most of the things which you have shown on your show; we made masks out of paper mache, we made some puppets out of sawdust. Art Workshop was a very interesting program.

Sincerely Yours.

The children liked their lessons by television, and said so. The many letters which the master teacher and the writer received during the course of the series attest to that. These letters indicated that the children were stimulated in thought and action by the ideas presented on the programs. Comments from their letters, and quotes by their teachers bear out the fact that the children were impressed with what they saw and heard on their TV sets. Some representative comments concerning the programs were:

"The studio children said just what I was thinking."

"I've never been any good at drawing or any kind of art work before, but from watching your program I'm learning."

"We (the class) have learned a lot about drawing from your show."

"Thank you for some of the most wonderful television shows we have ever seen."

"Your cameramen could do a better job."

"I'll be sorry when the television programs are over."

The last comment was similar to that expressed by many other children; they didn't want the programs to end. As the series came to a close, more letters poured in to the master teacher and to the office of the Ohio School of the
Air. These letters expressed the hope for future programs. One fifth grade boy expressed the hopes of all of the children when he wrote to Dr. Hausman saying,

"We've been watching your programs for some time now. We enjoy it very much, and we have been getting many good ideas from them. . . . . . . . We hope we can continue to watch and enjoy learning from programs on television in the future."

Summary of the Fifth Evaluation

The information obtained by the study in the North Linden School points out that the children enjoyed the television series very much. They found the programs interesting and were stimulated to try new ideas both in class and at home. The program dealing with puppets was the most popular, while that on Mexican Art was least well liked by the greatest number of students. Letters and comments of the children showed that they learned from the programs and put to work the ideas they got from the series.

Chapter Summary

The five step evaluation of the "Art Workshop" series was primarily descriptive in nature. The study used seminar teachers, their children, teachers appearing on some of the television programs, and a group of teachers who used the programs but who were not in the art education seminar or
in any way connected with the programs. In addition, two teachers in the North Linden Elementary School of Columbus contributed the reactions of their fourth and fifth grade classes to the evaluation.

The study concerned itself with an examination of the effect which the programs had on the interests and attitudes of the children and their teachers. Information was sought concerning the effectiveness of individual programs and of the series taken as a whole. The reactions of teachers and children to the television programs were studied.

Generally, the evaluation of the "Art Workshop" series presented evidence that the classroom telecasts had a measurable effect both on the teachers and pupils who viewed them. Findings of the five separate evaluations showed certain relationships to one another. More children liked art activity after the series, and more used a greater variety of art materials after the series. Related to these findings are those which indicated that teachers used more time for art activity after the series, used more democratic planning techniques, and also reported increased ability to appraise and evaluate their children's art work with a greater degree of confidence and skill.

Evaluation of the series taken as a whole by a panel of seventy-three teachers who had used the programs found that the majority of the teachers felt the programs had had definite value both as a device for enriching the art curriculum and as an in-service device for their use. Inter-
related with the findings of this particular appraisal were several results of the other evaluation of the art series:

1. Teachers found it possible to use the ideas presented on the art programs in their classes.
2. The programs stimulated the children to art expression.
3. Pupils and teachers alike noted an increased interest in art.
4. Teachers felt that the educational value of the "Art Workshop" programs was high.

Direct responses from sixty-nine children studied at the North Linden School also substantiated earlier evaluation reports to the effect that the programs stimulated children to art activities, and that children regarded their art products as more valuable following the series. Similarly, the children's reports agreed in most respects with earlier evaluation made by teachers concerning the programs which were liked most, and those liked least. The programs covering puppets were best liked, and one which dealt with Mexican Art was liked least of all. It is also interesting to note that children reported they did more art work at home, and read more about art following the telecasts.

Other specific findings of the evaluations which have significance are these:

1. There was a conspicuous rise in the number of art media used in the classrooms after the series, and more teachers reported activity with more than one art medium or art material at a time, after the series.
2. More children showed care and concern for their art equipment and materials after the series.
3. The sources for ideas for art activity increased after the series, with a trend toward greater variety.

4. Of the schools involved in the study, 88 per cent had at least one television set. The most popular sized set was the set with twenty-one inch screen.

5. Most of the teachers reported that the art series had brought art resources into the classroom which she, the teacher, could not have provided, and that the series had aided the pupils to develop a more critical point of view toward art.

6. Teachers felt that their children had benefited from the series by showing an increased appreciation for art forms, an increased imagination and creativity in art, and an increased ability to see the relationship of art to daily living.

7. Children on the programs were of value in giving the classroom children viewing confidence to try the art work, and in providing a sense of participation.

It is significant that the changes in teaching and planning methods and in the interests of the teachers studied bear relationship to the changes in interest and degree of liking for art activity expressed by the children participating in the evaluation.

The five step evaluation brings out some rather definite points, as the summary shows. At the very least, the evaluations show that the classroom telecasts in art were enjoyed by the children viewing them; that they had measurable effect on both teachers and pupils, and that the teacher and pupil alike seemed to derive benefit from their use in the classroom.
CHAPTER SIX

PLANNING AND PRODUCTION TECHNIQUES
USED IN THE SCIENCE AROUND US SERIES

As in the case of "Art Workshop", certain problems arose in the planning and production of "Science Around Us." Since very little information is available concerning the problems common to the producing classroom telecasts, a detailed report of the problems encountered has been included for the "Science Around Us" series.

Planning Techniques.

The science series developed much less rapidly than "Art Workshop". This slow development was due to one false start, which began November 10, 1953. On that date, the writer met with the TV science committee, composed of the Director of the Ohio School of the Air, the Coordinator of Radio and TV Education, the Director of the Bureau of Educational Research, and two members of the Geology Department, all from Ohio State University, and two elementary supervisors from the Columbus Public Schools, and the Director of Audio Visual Education for the Columbus Public Schools, to determine if it would be desirable to produce a series of classroom telecasts in elementary science for the intermediate grades during the winter of 1954. The TV Committee decided it would be both possible and advantageous to produce such a series which would emphasize natural
science. The purposes suggested by the committee were:

1. To give confidence to the elementary teacher who has to teach science.

2. To stimulate the children in the intermediate grades to do scientific thinking by using the problem solution method.

3. To teach children how to use knowledge effectively.

4. To teach children to be more observant of their environment.

The programs were to be prepared in somewhat the same manner as the "Art Workshop" series, using a twenty-teacher seminar group drawn from the Columbus public and suburban schools to help plan the content.

In early December the Geology department of the University announced that it could not continue with plans for the science series, since the master teacher selected could not free himself from other responsibilities. This delayed the start of the series until early 1954.

The TV Committee met again during the first week of January, 1954, to reorganize the science series. Professor Guy Cahoon of the Department of Education was added to the group. The plan for the science series was resurrected, and a new spirit generated for activating a teachers' seminar to proceed quickly with the planning of the series which would emphasize the area of general science rather than natural science. It was decided that Professor Cahoon would supervise the work of the science seminar, along with the writer.
The elementary supervisors and Professor Cahoon selected a group of elementary teachers to enroll in the seminar in science education during the winter quarter of 1954. This seminar, like that for the art series, would meet two hours weekly. Three hours of university credit would be offered to those completing the course.

Preliminary Planning by the Seminar Group

The first general meeting of this seminar group was held January 12, 1954, at the Ohio State University. Here, the seminar idea was explained to the twenty teachers present. The TV Committee members explained the plan for the school telecasts, and discussed the need for the elementary teachers to help with the organization and planning of the program content.

Later the committee asked the teachers to give their candid opinions about science lessons presented over television. Questions of this kind were asked:

1. What can television lessons do for your class? For you as a teacher?
2. In what areas of general science could it help you most?
3. Do you think the children would react favorably towards a science series on television?
4. Should the programs be subject centered or technique centered?
5. What kind of programs would you suggest?

The teachers hoped that a television series in science
would help both teacher and pupil to recognize scientific concepts more readily, and to show them how they might be applied in daily living. The teachers responded enthusiastically to the suggestion that they help plan the ten-week series of science programs. They were assigned the task of sounding out their pupils during the following week to discover what they were curious and disturbed about concerning science. The teachers were to bring back their ideas to the seminar the following week.

At the beginning of the second meeting the teachers were asked for oral reports of the suggestions for television programs offered by their pupils during the week. Almost all had reports to offer. The following condensation of the suggestions represents the items most frequently mentioned by the pupils.

The fifth graders were interested in their environment, and wanted to explore things which were quite near to them; commonplace things in life, and what makes them work.

The sixth grades listed the following topics in which they were very interested:

- Atomic Energy -- What is it?
- Magnetism -- Electricity
- Insects
- How the Earth Began
- What Makes Jet Planes Go?
- Weather
- How does an X-Ray Work?
- What is Sound?
- Why do Magnets Attract Iron?
- Underground Rivers
- Simple Home Experiments
- Quiz Programs on Science
- What Makes the Wind Blow?
- What Makes Wind Stop Blowing?
- What Starts Wind Blowing?
- How do Compasses Work?
- What About Our Own Bodies?

The fourth, fifth, and sixth graders generally wanted answers to problems concerning these topics:
With these specific problems in mind, the seminar group set about drawing up further objectives for the science series. The purposes agreed upon by the seminar teachers were these. The TV series should strive to:

1. Help the children to become familiar with scientific reasoning and to help them solve their problems logically.

2. Acquaint the children with important information about their environment.

3. Open up for the child areas about which questions could be asked, and answers sought scientifically.

4. Stimulate teachers and children to try scientific experiments, recognizing and using scientific concepts.

5. Help the intermediate school teacher recognize the broad concepts of science.

6. Meet both the needs and the interests of the children in the field of science.

From the list of pupils' suggestions the seminar recommended that from four to six major general topics be explored on the science series. These areas were selected:

1. Communications.

2. Air and Weather.

3. Nature (or the Study of Living Things).


5. Atomic Energy.
6. Astronomy.

It was further decided that each major topic should be divided into three more specific and related topics, each of which would become the subject for one telecast. Effort would be made to inter-relate the topics wherever possible.

The seminar group suggested that the first three programs in the science series should deal with the area of radio-communications. The units were to be divided as follows:

1. Sound
2. Magnetism
3. Electricity and Light

From here the teachers returned to their classrooms to learn from their children specifically what intrigued them about sound, magnetism, electricity, and light. The ideas and suggestions of the teachers, based on opinions expressed by their students, were to be brought back to the next seminar to be discussed, weighed, and incorporated into a program outline for the producers and writers.

At the third seminar meeting on January 26, the series was given the name, "Science Around Us." At this meeting the seminar group of twenty teachers was broken up into three production groups or units of equal size. Each group was assigned to draw up an outline for one of the programs for the general topic to be considered, that of radio-communications. Group one was to prepare an outline for the program
on sound; group two the program on magnetism, and a third
group, the program on electricity and light. The outline
prepared by each group was to include a statement of the
purpose of the program, the technique to be used, apparatus
to use, principles to be emphasized, etc. This outline in
turn was submitted to the writer for use in writing and
producing the actual program script. The major units of
science which were to be explored in the series were recon­
sidered and revised at this meeting. The units on health and
atomic energy were eliminated, leaving "Radio-Communication," "Air and Weather," "Study of Living Things," and "Astronomy."
This was done in order to cover the major units thoroughly
on several programs. Individual programs were distributed
within these units as follows:

The outline of programs to be presented was arranged as
follows:

I. The Radio-Communication Unit.

1. Sound -- Sound in Television
2. Light -- Light in Television
3. Electricity -- Part Electricity Plays in TV
4. Summary Program Unit.

II. The Air and Weather Unit.

1. Air and Its Properties
2. Weather
3. Weather Forecasting

III. The Unit on Living Things.

1. The Plant World
2. Our Animal Friends
IV. The Astronomy Unit.

1. The Sun and the Moon
2. Our Solar System

It was decided that the programs were to be of the direct teaching type using a master teacher, with a minimum of pupil participation in the studio. No children were to appear on the first four programs. The master teacher would talk directly to the classroom children, conducting experiments, solving problems, raising questions about scientific concepts, and teaching general science before the TV cameras. Children would be used on subsequent programs if the master teacher wanted them, or if the group felt they were needed to improve the presentation. The master teacher was to call in experts and authorities on any of the programs if he needed extra resources. The television programs were to be prepared three weeks in advance of the broadcast date so that teachers could be informed in advance of the material to be covered in any lesson.

Other Pre-Broadcast Arrangements

Arrangements were made with station WTVN during the final week of January for reserving Monday mornings from 10:00 to 10:30 for the "Science Around Us" series. The station agreed to make the Monday morning half-hour period available for a ten-week period beginning March 1, 1954. Substantially the same production arrangements were agreed upon for "Science Around Us" as for "Art Workshop."
The publicity and promotion material was meant to inform teachers and educators in the area that the science series would soon be available for use in their classrooms. The formula followed for "Art Workshop" was again used with "Science Around Us," and once more publicity folders, news stories, spot announcements on WTVN and WOSU, and letters appeared calling attention to the coming new science series. The university art department redesigned the publicity folder used for "Art Workshop" so that it could be used again to publicize "Science Around Us." (A copy of this folder is provided in Appendix C.) The folders, (containing essentially the same type of information as those for the art series), were mailed to over 500 schools in the coverage area of WTVN, to teachers who were on the Ohio School of the Air mailing list, and who had previously requested teachers' manuals for the "Science Club" series on WOSU during 1948-49. A small card accompanied the folder, which teachers were to return if they wanted to receive the manual and information sheets for the programs. Space was also provided on this card for teachers to tell whether or not they had TV sets in their schools. Two folders were mailed to superintendents and principals; one for their own use, the other for the PTA president. WTVN paid the costs of printing of the science publicity folders.

The teachers' manual for the science series was planned and prepared by the writer in cooperation with Prof. Guy Cahoon of the Education Department and Lewis Evans of the
Elementary Science Department of the University School.
The manual was to help the individual teacher in using the telecasts most effectively. It was organized in much the same fashion as the "Art Workshop" manual.

Part One contained the titles of the various programs, the days they were to be telecast, and the station over which they would be transmitted.

Part Two described in detail the purpose and nature of the "Science Around Us" series.

Part Three contained helpful suggestions to the teacher for using the telecasts with her class.

Part Four suggested possible sources of classroom demonstration materials, experimental materials, gadgets, and types of experiments which might be conducted in the classroom for the exploration of scientific concepts. It contained an up-to-date bibliography of good science books which could be used as supplementary textbooks and readings for each of the programs in the series.

Four hundred manuals were prepared for "Science Around Us." Requests for 200 more were received prior to the time the series went on the air on March 1st; twenty-seven additional requests were received during the series. In addition to the manuals, a teachers' guide sheet was mailed to each teacher using the series weekly to keep her informed of exactly what was being covered on the particular program next to be telecast.

Selection of the Master Teacher

The first three science programs and information sheets were considered during meetings four and five of the seminar
group, held February 4th and 11th. At the fifth meeting, the seminar group selected from their number four seminar teachers, who, the group felt, would be good television teachers. A committee composed of Dr. I. Keith Tyler, Professor Cahoon, and the writer held an audition the following week in the studio of WTVN to determine which of the four men would make the best TV teacher for the series. The audition was conducted as follows:

Each of the four teachers prepared a four-minute science lesson illustrating a scientific concept. He was to explain this idea as he would to an elementary grade class, but before a live TV camera. The teachers were oriented concerning the camera prior to the audition, and they drew lots to determine order of appearance. The audition committee watched each performance on a monitor in one of the production offices of the station. Only one camera was used for the auditions in order not to make the audition too complicated. All four of the auditions were very well done, with teachers adapting themselves readily to the need of talking directly to the camera, and taking advantage of close-ups to show the details in their demonstrations.

The audition committee unanimously selected Robert Lemmon for the job of master teacher, a young teacher from the Tremont School in Upper Arlington, a suburb of Columbus. Mr. Lemmon taught fifth grade classes at the Tremont School and was very much interested in general science.
Production of the Series.

The "Science Around Us" program format was designed primarily as a one-man program which was to feature the master teacher appearing alone and talking directly to the cameras. The programs were to use a more direct technique than "Art Workshop" and purposely excluded the simulated school classroom with a participating class. This was done to experiment with the effectiveness of simple straightforward presentation for classroom use. If children were used in the studio, only two or three were to appear on any one program. The following was the format used for the science programs:

The program opened with Mr. Lemmon at a typical school work table in a setting resembling the front of a school classroom. He greeted the children and explained the problem to be discussed in the lesson. He then suggested different methods of solving or throwing light on this problem. Since he was attempting to teach children to use the scientific method to solve science problems, he stressed the importance of securing adequate evidence and evaluating the evidence presented, in all of his demonstrations. Frequently he raised questions concerning an experiment, suggesting that the children find the answers. Occasionally he gave them a clue or suggested an experiment by which to find the needed evidence.

To illustrate his points, Mr. Lemmon made use of a
large flannel board, a blackboard, and models of actual equipment; he also conducted experiments and made extensive use of demonstrations. Whenever possible the experiments were done with simple, easy-to-get materials so that the elementary teachers could duplicate the experiments in their own classrooms, or that pupils might do the experiments at home. The master teacher occasionally used professional type materials which the ordinary teacher could not obtain, to add interest to the programs, and to bring unusual equipment to the television screens.

During the course of the broadcast, the master teacher moved from one experiment to another, drawing new facts or confirming conclusions arrived at earlier from each, and emphasizing facts by use of the flannel board and blackboard. New words were placed on the flannel board. Some were defined, and others were left for the pupils to look up for themselves following the program.

Toward the end of each program Mr. Lemmon always summarized the lesson and suggested post-class activities for the classroom students who watched the programs. Frequently he recommended a special "experiment of the week" telling the pupils how they might set up in their classroom an experiment to test one of the theories he had presented on the program. He did not perform the experiment on the program, but left it for them to complete during the week. The experiment was referred to again on the following program, and the correct solution was given. The various
programs were closely integrated, and it was recommended that the classes watch all of them for maximum benefits.

The production procedure used in the series was as follows:

1. Professor Cahoon of the Department of Education, and the writer supervised the production of the "Science Around Us" series, with the seminar group acting in an advisory and supervisory capacity. The writer acted as television resource person, giving suggestion, answering questions, and suggesting methods of solving production problems.

2. At the third meeting of the seminar, three program groups were organized. Each group selected a chairman to guide the discussions concerning program planning and to keep the writer informed on program recommendations made. Each of the individual groups was responsible for the organization and planning of at least three of the eleven programs in the series. Groups one and two prepared four programs each, while group three prepared three. To maintain unity in the planning of a major unit, such as the one of radio-communications, air, and weather, etc., it was necessary that each group know the basic direction to be taken for the whole unit. Consequently, before individual programs were planned by any group, the entire seminar discussed at length objectives and content of the unit of which those programs were a part. Figure 5 shows the programs planned by each of the three groups in the science seminar.
3. At the beginning of the planning, the entire seminar group discussed the development of the radio-communications unit. What should be emphasized? How could sound, light, and electricity be worked into it most skillfully? What were questions which the classroom children had asked about communications? Most children seemed to have been extremely curious about how television worked. They wanted to know where programs originated and how they came through the air to their sets. The group decided to make television the point of departure for the unit on communications,
letting it be the theme for each program in this unit. Once this decision was made the seminar decided program 1 would develop **sound in television**, program 2 **light in television**, number 3 **electricity and its relationship to television**, and program 4 would summarize the whole radio-communication unit.

4. Next the seminar was divided into groups with each group assigned the responsibility of developing its own program for the radio-communication unit. Each group planned the organization of the program, and conducted the necessary research for the program assigned, including the securing of properties and special materials, and preparation of the teachers' information sheets for the programs, aided by the writer and the master teacher. A ten minute reporting session was arranged preceding the close of each of the seminar meetings, during which each group chairman explained to the seminar members the program plan and the progress his group made in program development. This kept programs closely related without duplication of ideas.

5. The program outline and the teacher-information sheet material were handed in to the writer two weeks prior to the program broadcast date. The writer and master teacher joined the group whose script was next due. Here all of the details in the program were carefully discussed from a TV production point of view, and necessary alterations made. This largely did away with potential problems which might have arisen after the writer had been given the outline suggested by the group.
6. When the groups finished the planning of their individual programs, the seminar moved to the next major unit, and the process was repeated.

7. While the series was in production the seminar meetings were conducted as follows: The first half hour of the seminar was devoted to a critique of the previous telecast. Reactions of the teachers and students were solicited, and weak points in the programs were discussed. The master teacher and the writer then explained next week's program. Suggestions were made for improvements. The seminar was then divided into small groups for further planning of individual programs.

8. Following the seminar meeting, the writer prepared the final working script and the teachers' information sheets. The sheets were dittoed and copies sent to all teachers on the mailing list.

9. The writer then met with the TV director at WTVN for a "talk through" of the program plans, ordering of slides, title cards, special effects needed for the program and other production details.

10. On the Monday morning of the program broadcast, the program was rehearsed at the TV station. Rehearsal procedure was as follows:

   a. The writer, director, and master teacher met at the station at 8:30 a.m. for a discussion of the script.

   b. The master teacher rehearsed the program with the director, whenever possible testing experiments, slides, and film clips to be
used, and carefully working out all of the transitions from one experiment to another.

c. Frequently experiments were conducted "on camera" prior to the actual telecasts to insure they would show up properly.

d. Rehearsal and checking of experiments took from 8:30 until 9:50 a.m. The set was then properly lighted, all experiments reset for the program, and the master teacher was allowed to relax prior to the time the program went on the air.

11. The program was telecast from 10:00 to 10:30 a.m.

12. Following the broadcast, the writer and the master teacher held a short critique session during which production flaws, problems of content, and general effectiveness of production techniques used were discussed.

13. Properties used in the program were returned to the schools by the master teacher and the writer following the program critique.

14. The science seminar met on Thursday afternoons from 4:00 to 6:00 p.m. Here the program was again criticized as suggested in paragraph 7, and suggestions were made for altering and improving the format and method of presentation. The reactions of the teachers and pupils were carefully noted. As in the "Art Workshop" seminar, the teachers in the seminar submitted written reports at each meeting dealing with the effect of the preceding broadcast on the children in their classes, suitability of production techniques used, the content of the program, etc. These reports were used by the master teacher and the writer in further modifying production
and presentation techniques on the "Science Around Us" series from week to week. After these reports were presented, the seminar group turned to the task of preparing the following week's program as described earlier.

This production technique, using a panel of elementary teachers to plan and organize the content of the programs, was followed for the entire series. The seminar teachers, their supervisors, Professor Cahoon, the master teacher Mr. Lemmon, and the writer worked together in planning, writing, rehearsing and presenting the eleven programs in the series. The seminar group served as the major source of ideas to be presented. The teachers in the seminar knew the needs of their children, as well as their own needs as teachers, and the supervisors knew the areas which needed emphasis. The production people knew how to present ideas by means of television, and the master teacher had some ideas concerning ways of teaching science to the elementary grades. By coordinating the efforts and ideas of all these people, a more effective series of programs was developed than would otherwise have been possible. The group of teachers proved to be an excellent barometer of pupil-teacher reaction to the "Science Around Us" programs. Teachers were free in their criticisms of the programs, were sensitive to shortcomings in the content and techniques used, and were very frank to report the plain truth about any program or part of one which did not "get through" to their children. Through use of the seminar group, it was
possible for those producing the series to know what changes should be made in the format of the programs and in the methods of presentation.

**Production Problems Encountered on "Science Around Us"**

Numerous production problems presented themselves during the eleven weeks of "Science Around Us." For clarity's sake they have been divided into four groups:

1. Production Problems Relating to the Program Format.
3. Production Problems Relating to Talent, and,
4. Production Problems Concerned with School-Station Relationships.

**Program Format Problems**

Finding a program format which would provide an effective means of presenting the ideas of "Science Around Us" was a challenging problem. A considerable amount of alteration and modification of the program format took place during the eleven programs.

The series began with three programs in which Mr. Lemmon appeared alone before the TV camera. He used no guest authorities, and no children appearing before the cameras. These programs involved direct teaching in a straightforward manner by the master teacher. The format
for these programs followed the form used for program for program No. 1, which is found in Figure 6.

Program No. 4 showed the first change in format, when Mr. Lemmon used a guest expert to help him explain how TV programs were sent coast to coast by means of micro-wave relays. A major reason for the change was dissatisfaction with the one-man approach reported by seminar teachers following the second and third programs. Their reports indicated that children lost interest in the subject matter, and felt the programs were too detailed. Although the children seemed to like Mr. Lemmon, they seemed to tire of watching one person for a full thirty minutes. In addition, after watching the experiments performed by the master teacher, some children were not convinced they could do them. A teacher such as Mr. Lemmon might do these things, but could a sixth or fifth grader? Complaints were made that the program content was above the level of some grades, and below that of others.

Criticism of this sort prompted an immediate change in the program format and manner of presentation. The seminar group decided to experiment with two programs in which a fifth grade boy and girl would appear with Mr. Lemmon. These children were to help with experiments, and to conduct some experiments of their own, on each program. They were also expected to ask questions of Mr. Lemmon whenever they did not understand the material being explained. Thus, the format changed from a situation in which Mr. Lemmon did all
<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening by Announcer</td>
<td>:30</td>
<td>10:00:30</td>
</tr>
</tbody>
</table>
Sets up problem for lesson.  
a. What is sound? How does it travel?  
b. How does sound get from TV studio to TV set? | 3:00      | 10:03:30   |
a. How microphone works in TV.  
b. How boom operator follows actors. | 3:00      | 10:06:30   |
| 4.   | Demonstration No. 2. Sound is Vibration.  
b. Experiments with all above elements. | 7:00      | 10:13:30   |
| 5.   | Demonstration No. 3, Sound Movement.  
a. Bell, jar, and vacuum pump experiment.  
b. Flask and bell demonstration.  
c. Sound waves demonstrated. | 6:00      | 10:19:30   |
| 6.   | Demonstration No. 4. How microphone transforms sound into electrical energy.  
a. Telephone mouthpiece demonstration.  
b. Carbon microphone demonstration. | 5:00      | 10:24:30   |
| 7.   | Demonstration No. 5. Sound Waves.  
a. Demonstration of oscilloscope.  
b. Summary of lesson. | 4:00      | 10:28:30   |
| 8.   | Closing of program by announcer | :30       | 10:29:00   |
of the teaching to one in which the children on the program aided in the experiments and the presentation of the ideas.

In the opening section of each of the two experimental programs, a problem situation was set up which involved the boy and the girl participants. The children were presented as attempting, by themselves, to solve some problem in science. After a minute or two in which they appeared on camera alone, they were joined by Mr. Lemmon who helped them explore the problem, or did an experiment or demonstration to help answer their questions. From this type of situation the three then developed related scientific concepts, using various kinds of visual material and apparatus. This format had certain advantages:

1. It reduced the amount of material covered on a given program, since more time was spent answering questions of the two children,

2. It brought greater clarity of ideas, and reduced the confusion which seemed to result earlier from sketchy covering of too much material,

3. The children actually were an aid to Mr. Lemmon, for they helped set the pace of the presentation, and gave him a link between the camera and the classroom.

After the two experimental programs it was decided by the seminar group that the children would be a permanent fixture on the programs. Different children were used on each program; most of them students from Mr. Lemmon's 5th grade class at the Tremont School in Upper Arlington. The format typical of these two experimental programs—numbers 4 and 5 in the series is given in Figure 7.
**Figure 7.**

**SCIENCE AROUND US PROGRAM FORMAT**
**PROGRAM NO. 5, MARCH 29.**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening by Announcer</td>
<td>:30</td>
<td>10:00:30</td>
</tr>
<tr>
<td>2.</td>
<td>Boy and girl in demonstration area looking at flannel board questions: a. What is air? b. Can air be seen?</td>
<td>1:00</td>
<td>10:01:30</td>
</tr>
<tr>
<td>3.</td>
<td>Master teacher enters, greets children. a. Demonstration: &quot;What is air?&quot; Boy and girl determine it is a mixture of gases. b. Girl shows mixture of ingredients. c. Boy proves air contains oxygen and water vapor.</td>
<td>6:00</td>
<td>10:07:30</td>
</tr>
<tr>
<td>4.</td>
<td>Master teacher demonstrates air pressure. a. Both children use plumber's friend suction cups -- have tug of war. b. Boy lifts heavy stool with suction cup. c. Master teacher shows air pressure by means of the exploding can experiment.</td>
<td>8:00</td>
<td>10:15:30</td>
</tr>
<tr>
<td>5.</td>
<td>Teacher and children show air has weight. a. Children do balloons and scale experiment. b. Weigh inflated basketball, then deflate.</td>
<td>4:30</td>
<td>10:20:00</td>
</tr>
<tr>
<td>6.</td>
<td>Master teacher and children show how we use air. a. Children show how it supports life. b. Teacher shows how it's related to weather.</td>
<td>5:00</td>
<td>10:25:00</td>
</tr>
<tr>
<td>7.</td>
<td>Experiment of the week of school children. a. Summarization.</td>
<td>3:30</td>
<td>10:28:30</td>
</tr>
<tr>
<td>8.</td>
<td>Program closing by announcer.</td>
<td>:30</td>
<td>10:29:00</td>
</tr>
</tbody>
</table>
Following the two programs in which the boy and girl were used, different numbers of pupils were used on the programs. Generally the use of both sexes on the programs worked satisfactorily, for the girls viewing liked to see members of their own sex on the programs who were able to do the experiments and understand the scientific ideas. The greatest number of children used on any of the programs was five. This was on the program dealing with forecasting the weather. A guest expert, the TV Weatherman from WBNS-TV in Columbus, explained the causes of weather on the early portion of the program, and also demonstrated how certain weather instruments were used in weather work. Following his demonstration five children from the fifth grade of the Perry Township School, three boys and two girls, showed their own adaptation of these weather instruments, and showed how simple weather instruments could be made from inexpensive and easy-to-get materials. The youngsters told the television viewers how they had set up a simple weather station at their school, and how they took weather readings and made predictions. The format for this program is given in Figure 8. A similar program format was used on the last program in the series, in which an astronomer from the Perkins Observatory explained the planets and stars which might be observed during the summer, and four of Mr. Lemmon's pupils demonstrated how students could make simple telescopes and viewing devices with which to make celestial observations.
## SCIENCE AROUND US PROGRAM FORMAT
### PROGRAM NO. 7, APRIL 5.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description of Studio Activity</th>
<th>Unit Time</th>
<th>Time Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Program Opening by Announcer</td>
<td>:30</td>
<td>10:00:30</td>
</tr>
<tr>
<td>2.</td>
<td>Master teacher sets up the problem of how weather is forecast, and introduces his guest, the TV Weatherman.</td>
<td>1:30</td>
<td>10:02:00</td>
</tr>
<tr>
<td>3.</td>
<td>Interview with TV Weatherman</td>
<td>12:00</td>
<td>10:14:00</td>
</tr>
<tr>
<td></td>
<td>a. How the weather bureau predicts the weather.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. What makes the weather.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Instruments used in predicting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. How to read a simple weather map.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>How to make your own weather instruments.</td>
<td>7:00</td>
<td>10:21:00</td>
</tr>
<tr>
<td></td>
<td>Five guest children from 5th grade of Perry School show how to make:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Anemometer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Wind vanes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Thermometer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Barometers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Rain guages.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Hygrometers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>g. Weather charts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>How to record findings and predict the weather. Fifth graders from Perry School. Master teacher questioning guests.</td>
<td>6:00</td>
<td>10:27:00</td>
</tr>
<tr>
<td>6.</td>
<td>Summarization of lesson, with a review of the new words used on program.</td>
<td>1:30</td>
<td>10:28:30</td>
</tr>
<tr>
<td>7.</td>
<td>Closing of Program by Announcer</td>
<td>:30</td>
<td>10:29:00</td>
</tr>
</tbody>
</table>
The "Science Around Us" format was flexible. Not more than three programs used identical formats. The keynote was change and experimentation. Considerably greater experimentation was carried on with the format and methods of presentation on "Science Around Us" than on "Art Workshop." Even with this experimentation, however, the principle of direct teaching was firmly adhered to throughout the series. Guests, participating children, and the master teacher always spoke directly to the camera, and directed all of the material to the classroom children.

Technical Problems

Cameras. One of the most serious production problems encountered on the "Science Around Us" series related to the number of cameras used. The series was planned and organized as a two-camera series; that was the original arrangement made with the television station. However, one day prior to the first broadcast it became a single camera program and remained such for the duration of the series. To cut expenses, the management of WTVN decided not to employ a second cameraman on Mondays, since "Science Around Us" was the only live production requiring two cameras on that morning. Union rules required that a cameraman had to be hired and on the job for not less than four hours; consequently the use of a second cameraman for a half-hour period would have cost the station four hours' pay at union scale. The availability of
only one studio camera for the broadcasts of the series was a definite handicap, since a great amount of visual materials were used in the several broadcasts. Disadvantages resulting from the use of a single camera can be summed up as follows:

1. Curtailment of movement on the programs. The programs were frequently criticized as being slow paced. This was partially due to lack of variety in camera shots imposed by the one camera.

2. A definite limitation of the number of good close-up shots.

3. Irregularities in the camera picture were clearly seen, since the director couldn't switch to a second camera while the video technician made necessary adjustments. On one occasion the camera "went black" for several minutes. Nothing could be done until the cameraman fixed it. Since audio was not impaired, the master teacher kept right on teaching until the camera was restored.

Steps taken in handling the programs to partially offset these disadvantages included the following:

1. A single area was used most of the time for experiments. Mr. Lemmon placed a low table on the demonstration table. The top of this table was about 24" x 16". Here, he conducted most of his experiments, lifting things up to it, where the camera could view it more readily.

2. The experiments were carefully arranged in order of their appearance, so that the camera could begin at one end of the table if need be, and move slowly and gradually down to the other end as the program progressed.

3. The working area was kept relatively small, so that the cameraman could reach objects easily by panning, or dollying a small distance.
4. Following the third program, on which a television camera was shown and explained, and on which the children were shown how a cameraman "racks over" to longer or shorter lenses, the cameraman would occasionally "rack over" to a longer lens for a specific shot. This was never done unless the master teacher asked, "on mike", for a "tighter" shot. He would tell the cameraman to come in close to look at the object and if not satisfied with the close-up would suggest that he "rack over to a 135 mm. lens to show it better." The cameraman did this readily, and the children in the classrooms enjoyed watching the new shot appear and come into focus. This procedure was used sparingly. Too frequent use of this technique slowed down the program's pace and could have been confusing to the children.

At first, the one camera seemed to help the master teacher in his television adjustment. He could concentrate on the single camera, talk to it, direct it to move in closer, and maintain an even sense of directness with his pupils in the classrooms without too much effort. However, these advantages soon were outweighed by the limitations which the single camera imposed. The master teacher frequently had to wait for shots he wanted. He had to watch a television monitor very closely to see if he was getting a good close-up shot. Close shots were often distorted. It is the writer's opinion that the fact that only one camera was available was definitely the most serious limitation which the series suffered. It impaired the effectiveness and possibility for great interest which the series possessed as originally planned.

**Lighting.** Lighting problems similar to those encountered on "Art Workshop" were found on the science programs,
although to a lesser degree since much of the science work was done in a smaller area. Some extra area lighting was used in order to insure that the experiments could be properly seen.

It was necessary to work with extremely low key light on the programs on "Light and its Properties", and on the "Electricity" program. The problem was to reduce light in the studio enough that a small charge of static electricity could be seen jumping across a gap. In the program on light it was necessary to show how light waves travel in straight lines. This was done by means of a smoke box and a beam of light from a special "pin spot". Studio lights had to be turned off so that the beam of light would be visible passing through the smoke-filled box with one glassed-in side. The "light" program took a considerable amount of pre-program preparation and adjustment. The experiments did not show up very clearly.

**Experiments.** Another technical problem which arose involved the use of water on the programs. Showing objects immersed in water raised a problem of lighting and camera angles. Although details could be seen quite readily with the naked eye, they often failed to show up when viewed through the television camera. Camera angles had to be painstakingly checked, and lights carefully adjusted over some water experiments to get satisfactory results. Water used in flasks, bell jars, and pans frequently had to be colored with food coloring so that too much light would not
be reflected into the camera, and so that the water itself could be photographed. Red food coloring was added for shots directly above the surface of the water, and light blue or green coloring was added for camera shots which 'looked' into the side of a bell jar or an aquarium tank.

The possibility of experiments going wrong or failing to come off properly was a problem which was faced from the beginning. The master teacher was prepared for any eventualty. Careful rehearsing and checking of the experiments prior to air time, whenever possible, proved to be effective insurance against failures. It was necessary occasionally to "load" demonstrations to be sure they wouldn't fail. For instance, the amount of current set up by a microphone is very small. A meter attached to the line to show the current didn't register appreciably. This was remedied by adjusting the meter so that it would exaggerate the smallest current flow. On the air it gave the needle a very telegenic boost, which helped establish the desired point. If an experiment failed to give expected results, it was done again if time permitted. Failing a second time, or time not permitting, the master teacher urged the students to try it at school and see if they could make it work. He explained what the results should have been so that the experiment was not a total loss. Fortunately this type of failure rarely occurred.

Flip Cards, Slides, and Graphics. Flip cards were also used on "Science Around Us" for program opening and closing.
As in the case of "Art Workshop", these cards were used instead of slides as an economy measure. On "Science Around Us", already hampered by the availability of only one camera, the program opening and closing were slowed up appreciably. Since the one camera had to be focused on flip cards in the studio in the opening of the program, it was necessary to fade to black following the opening, to allow the camera time to pan to Mr. Lemmon. Slides would have allowed much greater flexibility to the program's opening and closing, as well as offering the other advantages discussed in relation to the art series.

When three-by-four transparency slides were used on the programs, they presented problems similar to those found in "Art Workshop". The difficulties were met by using the small rear projection screen built for the art series. The projector and slide screen were set up in the demonstration area, and operated by one of the guest children; lights were turned out in the studio area, and Mr. Lemmon described the slides, pointing out items of special interest. Two-by-two slides and film strips were used in this same way, in preference to using the projection room equipment. The advantage of the studio technique was that the teacher could project the slides at his convenience, and could also point to specific items on the screen to emphasize points which he was making—values not possible had the slides been handled in the film projection room. The quality of the pictures shown on this apparatus was very satisfactory.
Quite often, small objects had to be shown on "Science Around Us." It was difficult to see them clearly unless the proper background was provided. Most small items were tested on camera prior to broadcast, whenever possible, and were especially backed with a light-colored poster stock similar to that used on "Art Workshop". Material of this kind was kept on hand for this purpose.

Blackboard materials did not show up well on the science program. The master teacher's writing wasn't too legible and the blackboard which the station supplied was not glare proof. In addition, the master teacher wrote slowly, which consumed valuable time, and slowed the pace of the program. This problem was solved by the designing, building, and use of a 6' x 4' flannel board. Mounted on an easel, it filled in beautifully for the blackboard, which was discarded after the second program. Questions, axioms, problems, rules, new words, and cartoon illustrations were placed on the board. An olive drab flannel material televised well when used with medium grey poster stock on which a darker grey lettering had been applied. Originally, narrow strips of medium guage sandpaper were attached to the felt board material. After two programs, a new material called "Flocked Poston" was used. Flocked Poston was more easily applied to material to be used on the flannel board since it has an adhesive backing. Flocked Poston's adhesive quality was better than that of sandpaper.

No special problems were encountered concerning scenery.
Actually, "Science Around Us" used the classroom portion of the "Art Workshop" set. One large demonstration table was used for most of the programs, while several of the small classroom desk type tables were used on programs seven, eight, nine, and ten. The set was dressed with pictures related to appropriate areas of the science lessons.

Production Problems Relating to Talent

The Master Teacher. Apparently there is no quick and easy method of orienting a new television performer to movements of the camera and of the microphone hanging over his head, to the signals and gestures from the floor director, and the fact that one has to move and act somewhat more slowly on television than in a classroom. As was the case in "Art Workshop", efforts were made thoroughly to acquaint the master teacher with TV studio, and studio procedures, with signals used by the floor director, and with other elements of production, prior to the first program. Undoubtedly this helped, but it still took two or three programs before the master teacher began to feel at ease before the camera.

Pacing the material properly and in a way which would maintain variety and interest in the presentation was one of his problems. When a particular segment of the program had been planned to run for four or five minutes, Mr. Lemmon would sometimes run overtime, throwing the program off
schedule, and making it necessary to eliminate important material at the end of programs. This problem was solved by providing the floor director with a format on which unit time was carefully recorded. The floor director then signaled the amount of time left in each program unit as Mr. Lemmon progressed, and when the unit time had elapsed waved him on to the next. The presence of guests and the children on later programs helped the pacing.

Mr. Lemmon admitted he felt more like a classroom teacher when children appeared on the program with him. Accustomed to pupil reaction to his remarks and ideas, he had difficulty adjusting to teaching to the impersonal TV camera. The use of children on the programs resulted in marked improvement in his television teaching technique. The questions the children asked seemed to guide his thinking, and the fact that he had to explain things to them as well as the camera provided a closer approximation of a classroom atmosphere for him. By the time the fifth program was put on the air, Mr. Lemmon was quite at ease before the camera, and was conducting "Science Around Us" with remarkable authority and effectiveness. He enjoyed the television teaching.

Children as Participants. The children caused no serious problems. Extra rehearsal time was required in order to establish where the children were to be, what they were to do, and what, if any, lines they were to speak. Rarely were the children given specific lines. The situation was
explained to them, and activity suggested. Invariably, they did the right thing. Since they were Lemmon's pupils, they rode to and from the station with him, Lemmon's insurance adequately covering possible risk for the two or three children. The children appearing on the program were chosen by a vote of Lemmon's class. This prevented any hurt feelings and jealousy within the class.

School-Station Relations Problems.

The working arrangements between the school production group and the TV station were less satisfactory for "Science Around Us" than for "Art Workshop". The management of the station failed to arrange for the use of a second camera for the science programs, although they had originally assured the group they would have two for both of the School of the Air productions. This was a major problem. Other problems were encountered during the eleven week series.

The Ohio School of the Air staff and the writer had set higher production standards than the production staff of WTVN seemed to be capable of providing. The director, (the same one who had directed "Art Workshop") found it most difficult to realize why camera rehearsal time was needed for a one-man show. Considerable persuasion was required to convince him that experiments would have to be tried out "on camera" in rehearsal in order to insure their effectiveness on the actual broadcast. Programs no less complex than "Science Around Us" were presented daily on WTVN with a
minimum of rehearsal, and rarely with any camera rehearsal. More or less constant pressure from the producing staff of the series was required to get any rehearsal time at all. Fortunately several cameramen and floor crew members became quite interested in the programs and were coaxed into viewing experiments through the camera prior to air time, and setting up the lights in such a manner as to insure the best possible close-up shots. The master teacher and the cameraman actually directed most of the program in considerable measure, since Mr. Lemmon asked for the close-ups he wanted, and often told the camera to follow him to a given point. By working out the details of the program carefully before taking it to the station it was usually well plotted and moved along smoothly without expert direction.

At the opening of negotiations for time with the station the school group was assured that network features would precede the Ohio School of the Air presentations, which would leave the studios available for rehearsal from 8:30 until 10:00, on the morning of the shows. After the first program, it was learned that the station was producing a fifteen-minute newscast and fifteen minutes of piano music—both sustaining—in the 8:30 to 9:00 a.m. slot on a daily basis in the same studio as "Science Around Us". These preceded the network program which came on at 9:00. In addition, the station sold several local "cut in" announcements on the network program, so that rehearsals had to be interrupted frequently for a minute or two of silence while a commercial
was aired from the studio. These factors served to disrupt the rehearsals of the programs, and to cut down the amount of time available for studio work.

Another problem which caused inconvenience to the school programs was the time change which went into effect April 26th, and which moved "Science Around Us" up to the 9:00-9:30 period in the mornings. This shift was made in order to free the 10 o'clock time slot for a commercial network program originating in Chicago. The shift in time lost a substantial part of the audience for the final four programs of the series, although the seminar group and the teachers outside the group who were evaluating the programs managed to continue with the programs. Unavoidable as the shift of time might have been, it took away the ideal time which the schools needed, and substituted a poor time for the last four programs in the series.

The station cooperated fully in providing storage space for properties, tables, and scenery used on the "Science Around Us" programs. It did more than its share of the publicity, promotion, and securing of television sets for the schools in the Columbus area. In all fairness to the station, it should be pointed out that WTVN was producing other programs in addition to the school programs. The station was quite understaffed in its production department, and naturally did not share the enthusiasm for classroom telecasting which the school group had. Nor did they have a full understanding of the problems involved. It must be remembered
that station WTVN was organized primarily as a business venture and not for education.

Chapter Summary

A detailed description and analysis of the production and planning techniques used in the "Science Around Us" series has been included to provide information concerning the problems encountered in producing classroom telecasts in science. The experiences covered in this chapter, along with those for the "Art Workshop" series may be the basis of certain generalizations.

Use of children on the telecasts seemed to add to the classroom interest in the programs. This was true for both of the series. The use of children on the programs required extra rehearsal time, caused problems in transportation, required extra orientation sessions, and called for more careful organizing of the rehearsal procedure in the case of both "Art Workshop" and the "Science Around Us" programs.

As in the case of the art series, a special teachers' seminar aided in the planning of the content of the science programs, and helped in some degree with the writing of the programs. University credit at the graduate level was offered to teachers who served as members of the seminar group. This added an incentive for teachers to join in the creative work, and provided educational experience for them.
as well. The intermediate grade teachers cooperating in the planning sessions successfully combined their knowledge of television techniques. The relatively large size of the science seminar group was surmounted by breaking the group into smaller units, as described earlier. This had the advantage of so distributing the work load of planning programs and of providing the specific program content that no one felt overburdened. It retained the advantage of getting suggestions concerning desirable content for programs from a fairly sizeable group. The chief value of the panel of nineteen teachers was that they provided excellent liaison between the classroom and the television production unit. In addition, their work in organizing and planning the program content was of considerable help.

Rehearsal time, both "off" and "on camera" was most important in the case of the telecasts in art and science, since art objects and science experiments required many close-up shots. Considerable care had to be exercised in the lighting of the programs to insure proper definition and clarity in the objects and experiments shown.

Both series were planned as two camera operations. "Science Around Us" became a single camera series through circumstances over which the producers had no control. Of the two series, "Science Around Us" was definitely the more handicapped in presentation.

The master teacher for the science series found he could teach more effectively with children on the program
than he could to the camera only. Both he and the master
teacher for the art series were able to teach more effective­
ly on television as they gained camera experience. Pre­
series training of both master teachers in television
studio procedures and techniques of television performance
undoubtedly helped them a good deal.

"Science Around Us" was planned and produced on a more
democratic basis than was "Art Workshop". This was done
deliberately, for the writer wished to learn whether a
group of teachers could be given the bulk of the responsibili­
ty for the planning of a television series for classroom use.
In the art series, the art supervisor, the master teacher,
and the writer did most of the original planning and
structuring of the series. The format was originated by the
TV committee and the writer, the master teacher was chosen
by the committee, the news letters were formulated by the
art supervisor and the master teacher, and most of the pro­
gram planning was done by the master teacher and art super­
visor with help and advice on content from the seminar. In
the case of the science series, however, the seminar group
shaped the entire series, organized it, selected the units
to be covered on the programs, determined the content of
each program, helped with planning of the program formats,
selected the four original candidates for master teacher,
and actually drew up outlines for the scripts and teachers'
information sheets under the supervision of the writer and
the science supervisor. Both techniques yielded good
results.

The science series made more use of experimentation with program production techniques than did the art series. The program format for science was entirely different from that of the art series. Although changes in program format were made in both series, the science series tried a wider variety of presentational techniques.

School-station relationships were satisfactory through the planning stage, with the television station bearing a large part of the publicity for the programs, and participating in the planning sessions to a small degree. Some problems concerning rehearsal "on camera" presented themselves in both series, but more particularly in the science series. Station employers found it hard to understand the need for devoting a considerable amount of rehearsal time to seemingly small details of production. It was quite obvious that the educators had different concepts of television production than did the station production staff.

The science series, like that for art, was guided by the criticism, evaluation, and suggestions of the seminar teachers. Their immediate contact with classroom children viewing the programs proved extremely valuable as barometers of pupils' opinion. Their frank appraisals and discussion of individual programs, teaching techniques used, and quality of production enabled the producers to alter the format of the programs, and the presentational techniques to attain the most effective methods.
CHAPTER SEVEN

EVALUATION OF THE "SCIENCE AROUND US" SERIES

Chapter six has discussed the planning, production, and the general problems encountered in the "Science Around Us" series. This was the first phase of the science study. The second phase concerned itself with an appraisal of the effectiveness of the science series as a teaching tool for use in the classroom. Like the evaluation of the art series, the science evaluation was of a dual nature, attempting to discover the effects which the classroom series had, both on the teacher and on the children whom she taught. Since "Science Around Us" was intended to be used by the intermediate grades of the Columbus, Ohio, area, the evaluation was based on information provided by a sample of teachers and pupils from that area.

The evaluation included the reactions of children and teachers both to the individual "Science Around Us" programs, and to the series as a whole.

To gain this information concerning the effectiveness and results of the "Science Around Us" series, five distinct appraisals were carried on in much the same manner as for "Art Workshop". They were:

1. An evaluation and criticism of individual programs in the science series, made by a group of nineteen teachers who were members of a special seminar group that helped plan the science programs.
2. An appraisal of the extent of student interest in the programs and of the effects of the whole series on student interest in science, made by a group of thirty-one teachers in whose classes all of the programs were seen.

3. A study of the effects of the series on the interests of the teachers themselves, based on questionnaires filled out by the same group of thirty-one teachers.

4. A general evaluation of the series of programs taken as a whole, made by each of a group of eighty-two teachers who had viewed the classroom telecasts with their classes.

5. An evaluation of individual programs based on the direct responses of sixty-three fourth and fifth grade children.

This chapter describes the research methods used to evaluate "Science Around Us" and presents the results of this evaluation.

The First Evaluation Procedure

The first evaluation procedure was an appraisal and criticism of individual programs in the "Science Around Us" series made by a group of nineteen teachers who were members of the special seminar group that helped plan the science telecasts. (Originally twenty teachers were present in the seminar. One teacher withdrew from the class after two weeks had elapsed).

Description of Methodology Used

The first evaluation used the questionnaire technique to obtain the reactions of teachers to the individual science
programs. The questionnaire contained twelve questions, most of them calling for "yes" or "no" answers, and some providing multiple choice answers of which one answer might be checked. (A copy of the questionnaire is provided in Appendix C.) The questionnaire sought reactions of the teachers to the content of the programs, the appropriateness of the ideas presented to the teaching curriculum and to the class level, the pacing of the programs, the picture clarity of visual material used, the reactions of the children in the classroom to any children appearing on the programs, the quality of production, the educational value of the program content, and the children's reactions to the master teacher.

Each seminar member filled out a separate questionnaire form for each of the eleven "Science Around Us" programs. Teachers were instructed to fill out the questionnaires immediately after the programs had finished in order to obtain the immediate reaction of the teachers. These completed questionnaires were submitted to the writer after each meeting of the seminar group, one week later.

This method was used to keep the production and planning group informed of the classroom reaction to the various program formats and production techniques used during the science series. The completed questionnaires also provided an index to the teachers' reactions to the entire series.

Seminar teachers were selected to fill out these questionnaires since they helped plan the program content
### Table 23.

**The Percentage of Seminar Teachers Indicating Specific Reactions to Individual Science Television Programs**

<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teachers Reporting:</strong></td>
<td>19</td>
<td>17</td>
<td>16</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>18</td>
<td>19</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Percentage stating program was*</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
</tr>
<tr>
<td>of great interest</td>
<td>21</td>
<td>21</td>
<td>43</td>
<td>63</td>
<td>27</td>
<td>38</td>
<td>53</td>
<td>47</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>quite interesting</td>
<td>59</td>
<td>86</td>
<td>54</td>
<td>16</td>
<td>37</td>
<td>63</td>
<td>47</td>
<td>27</td>
<td>43</td>
<td>48</td>
</tr>
<tr>
<td>just interesting</td>
<td>10</td>
<td>8</td>
<td>2</td>
<td>21</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>20</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>fair or poor</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Program held interest from the very beginning</td>
<td>59</td>
<td>86</td>
<td>92</td>
<td>63</td>
<td>90</td>
<td>63</td>
<td>59</td>
<td>80</td>
<td>68</td>
<td>96</td>
</tr>
<tr>
<td>later in program</td>
<td>41</td>
<td>14</td>
<td>8</td>
<td>31</td>
<td>10</td>
<td>37</td>
<td>41</td>
<td>20</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>at no point</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Program was very well suited to class</td>
<td>21</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>15</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>quite well suited to class</td>
<td>59</td>
<td>80</td>
<td>87</td>
<td>63</td>
<td>85</td>
<td>90</td>
<td>68</td>
<td>63</td>
<td>78</td>
<td>96</td>
</tr>
<tr>
<td>below class level</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>above class level</td>
<td>15</td>
<td>15</td>
<td>5</td>
<td>37</td>
<td>0</td>
<td>0</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Program paced just right</td>
<td>26</td>
<td>80</td>
<td>96</td>
<td>95</td>
<td>100</td>
<td>90</td>
<td>95</td>
<td>95</td>
<td>68</td>
<td>100</td>
</tr>
<tr>
<td>too rapidly</td>
<td>76</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>too slowly</td>
<td>0</td>
<td>20</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>5</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>Educational value of program excellent</td>
<td>63</td>
<td>15</td>
<td>52</td>
<td>13</td>
<td>95</td>
<td>37</td>
<td>52</td>
<td>15</td>
<td>21</td>
<td>52</td>
</tr>
<tr>
<td>good</td>
<td>37</td>
<td>70</td>
<td>48</td>
<td>43</td>
<td>5</td>
<td>63</td>
<td>43</td>
<td>75</td>
<td>59</td>
<td>48</td>
</tr>
<tr>
<td>fair or poor</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Quality of TV production excellent</td>
<td>15</td>
<td>5</td>
<td>6</td>
<td>15</td>
<td>21</td>
<td>27</td>
<td>32</td>
<td>10</td>
<td>17</td>
<td>46</td>
</tr>
<tr>
<td>good</td>
<td>75</td>
<td>75</td>
<td>46</td>
<td>59</td>
<td>71</td>
<td>73</td>
<td>68</td>
<td>75</td>
<td>68</td>
<td>52</td>
</tr>
<tr>
<td>fair or poor</td>
<td>10</td>
<td>20</td>
<td>48</td>
<td>26</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>2</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
TABLE 21.

THE PERCENTAGE OF SEMINAR TEACHERS INDICATING SPECIFIC REACTIONS TO INDIVIDUAL SCIENCE TELEVISION PROGRAMS (Continued)

<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers Reporting:</td>
<td>19</td>
<td>17</td>
<td>16</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>18</td>
<td>19</td>
<td>16</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Percentage stating degree of interest and appeal on program was:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>excellent</td>
<td>10</td>
<td>6</td>
<td>7</td>
<td>36</td>
<td>65</td>
<td>15</td>
<td>38</td>
<td>65</td>
<td>36</td>
<td>52</td>
<td>56</td>
</tr>
<tr>
<td>good</td>
<td>68</td>
<td>53</td>
<td>39</td>
<td>32</td>
<td>30</td>
<td>85</td>
<td>52</td>
<td>30</td>
<td>53</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>fair or poor</td>
<td>22</td>
<td>36</td>
<td>4</td>
<td>37</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>11</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Ideas were related to the curriculum:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>59</td>
<td>70</td>
<td>90</td>
<td>59</td>
<td>90</td>
<td>95</td>
<td>85</td>
<td>84</td>
<td>75</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>no</td>
<td>27</td>
<td>18</td>
<td>6</td>
<td>32</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>unsure</td>
<td>14</td>
<td>12</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Able to use the ideas in class:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>90</td>
<td>82</td>
<td>96</td>
<td>63</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>88</td>
<td>95</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>no</td>
<td>10</td>
<td>18</td>
<td>4</td>
<td>37</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>12</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>unsure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Program stimulated new exploration:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>59</td>
<td>61</td>
<td>89</td>
<td>59</td>
<td>78</td>
<td>85</td>
<td>43</td>
<td>85</td>
<td>59</td>
<td>14</td>
<td>94</td>
</tr>
<tr>
<td>no</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>19</td>
<td>17</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>unsure</td>
<td>36</td>
<td>30</td>
<td>6</td>
<td>22</td>
<td>5</td>
<td>15</td>
<td>47</td>
<td>10</td>
<td>31</td>
<td>52</td>
<td>6</td>
</tr>
</tbody>
</table>

Ideas presented on program were:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>about right</td>
<td>78</td>
<td>76</td>
<td>94</td>
<td>64</td>
<td>100</td>
<td>100</td>
<td>85</td>
<td>90</td>
<td>78</td>
<td>96</td>
<td>95</td>
</tr>
<tr>
<td>too numerous</td>
<td>22</td>
<td>12</td>
<td>6</td>
<td>36</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>5</td>
<td>22</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>too few</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
and know how the programs were to be presented. In addition, these teachers were free to observe the reactions of their pupils during the programs. The teachers expressed their criticisms of the programs freely, and were instructed to give their honest reactions to the various programs without "pulling their punches".

Findings of the First Evaluation

A summary of the information provided by the nineteen teachers for all eleven programs in the "Science Around Us" series is presented in Table 23.

Collectively, the nineteen seminar teachers found most of the programs "quite interesting" or of "great interest". They believed that the programs had a high degree of educational value and interest and appeal. They found it possible to relate most of the ideas which the programs presented to the work going on in their classes. Teachers felt that the programs stimulated new research and exploration in science on the part of their children. However, only a few of the teachers rated the production of the science programs as "excellent".

Questions 10 through 12 asked for reactions to the master teacher and whether there were any features of the program which teachers felt should be improved. Teachers' reports on Mr. Lemmon were very favorable.

Constructive criticism from the teachers included
comments on everything from the camera work to individual experiments and explanations. The criticism highlighted these points:

1. Both teachers and children felt that if children appeared on the programs, they should be an integral part of the program, contributing to the information.

2. Inclusion of reviews of previous week's programs was not liked by either the teachers or the children.

3. Teachers and children both preferred the straight lecture type of presentation with ample use of visual materials, to the use of authorities who only talked.

4. Teachers commented frequently on the fact that only one camera was used on the program.

Programs 5 and 11, which dealt with "Air and Its Properties" and "Astronomy" rated the highest number of "excellent" ratings from teachers, on the basis of the educational value provided. These two programs rated very high in interest and appeal. The experiments performed on program five were of "great interest", because they were of the type which children could do themselves, but were new to most of the viewers. Program 11 demonstrated how to make telescopes for viewing the stars, and pointed out the stars which would be closest to the earth during the vacation months. A guest scientist was used on this program, and slides of planets were shown. The programs dealing with television were rated quite low on both educational value and production, probably because they were quite technical in nature, and because the experiments included in the pro-
grams did not show up very clearly. Program 7, which dealt with "Weather Forecasting", received several low ratings because the guest weather expert used somewhat advanced vocabulary in his explanations of certain weather phenomena.

Summary of the First Evaluation

The critical reports which the nineteen seminar teachers submitted for each of the programs indicate that both teachers and pupils found the programs collectively interesting. The children who worked before the cameras seemed to add interest to the programs, but the classroom viewers wanted them to be actively engaged in the presentation of the program content. Teachers felt that the resources brought to the classroom via television were those which they could not have provided, and agreed also that the programs constituted excellent motivation for further activity in the areas suggested by the master teacher.

The Second Evaluation Procedure

The first evaluation dealt with the reactions of teachers to individual "Science Around Us" programs: the nineteen teachers included in the special science seminars. The second evaluation procedure tried to appraise the extent of student interest in the programs, and the effects of the entire series on student interest in science.
Description of Methodology Used

To provide information for this second evaluation, the questionnaire method was used. Each of a group of thirty-one teachers in whose classes the various programs in the science series were used, was asked to fill out two questionnaires, one, approximately two weeks prior to the start of the "Science Around Us" series, and the second, two weeks after the series had terminated.

Teachers participating in this evaluation included the nineteen teachers enrolled in the science seminar, and an additional group of twelve teachers who had requested manuals and information concerning the science series some weeks before the first program went on the air. A total of 874 pupils in the fourth, fifth, and sixth grades were in the classes taught by these thirty-one teachers; their evaluations of pupil interest in the series was based on their observations of these 874 children. Table 25 shows the distribution of the 874 children observed, by grades.

The two questionnaires filled out by the thirty-one participating teachers were exactly the same. (A copy of the questionnaire will be found in Appendix C.) Each asked the teachers to give the number of children whose behavior during classroom science sessions indicated each of a number of possible levels of interest in art---in the one case, before the series of science telecasts began, and in the second, after it had been completed.
### TABLE 25.

DISTRIBUTION OF PUPILS WHOSE ATTITUDES TOWARD SCIENCE WERE EVALUATED BY THEIR TEACHERS

<table>
<thead>
<tr>
<th></th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
<th>Sixth Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>In classes taught by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nineteen seminar teachers</td>
<td>156</td>
<td>198</td>
<td>210</td>
</tr>
<tr>
<td>Twelve non-seminar teachers</td>
<td>88</td>
<td>101</td>
<td>121</td>
</tr>
<tr>
<td>Totals:</td>
<td>244</td>
<td>299</td>
<td>331</td>
</tr>
</tbody>
</table>

Each questionnaire sought the following specific information:

1. The attitude of the children toward science as an activity.

2. The degree of interest children showed regarding scientific aspects of daily phenomena. (lights, cars, etc.)

3. The degree of interest children showed in their natural environment. (rocks, trees, animals, insects, etc.)

4. How well informed children were in regard to basic information concerning scientific phenomena. (knowledge of scientific principles and the ability to apply it to what they know.)

5. The degree to which children suspended judgment on a problem until sufficient evidence was presented for a solution.

6. How well the children worked together on group projects in science.

7. The amount of importance children attached to science.

After the "Science Around Us" series had ended, data
on the two questionnaires were tabulated by the writer for the nineteen seminar and twelve non-seminar teachers who had completed the forms, and the results compared. Results of the evaluation forms are presented separately for each of the seven questions used.

Results for the First Question

1. "What was the attitude of the children toward science as an activity before and after the science series?"

The results for this question are presented in Table 26.

<table>
<thead>
<tr>
<th></th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>874</td>
<td>874</td>
</tr>
<tr>
<td>Percentages reported as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liking science very much</td>
<td>37%</td>
<td>49%</td>
</tr>
<tr>
<td>Mild liking for science</td>
<td>35</td>
<td>33</td>
</tr>
<tr>
<td>Indifference for science</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Mild dislike for science</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Disliking science very much</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Findings. In the total group of 874 children, about
three-fourths of the group liked science quite well prior to the telecasts. There was a noticeable increase in the number of pupils who liked science very much after exposure to the telecasts in science, with 12 per cent more children reported.

These figures represent the results of teachers' observations of their own pupils. This increase in the size of the group evidencing a liking for science as an activity could be due to the television series, or to other factors. For instance, the effectiveness of the classroom teacher herself could have been responsible for such an increase. Regardless of possible causes, the evaluation showed an increase in the proportion of students liking science very much from 37 per cent to 49 per cent after the science series had ended.

Variations. There was no significant variation among the findings for the fourth, fifth, and sixth grades studied. These children showed similar tendency to like science more following the series. Table 27 presents the variations between the seminar and non-seminar teachers' observations.

Only a small difference existed between the seminar and non-seminar groups. The size of the group "liking science very much" was larger after the series for the seminar group with a 15 per cent increase in size, while the non-seminar groups' increase was only 9 per cent. However, if one combines those "liking science very much" with those
showing a "mild liking" for it this difference becomes quite small, with the seminar group showing an 11 per cent gain, and the non-seminar group a 12 per cent gain in size. This would suggest that the two groups of teachers matched up quite evenly for this question, in terms of their observations.

### Table 27.
THE PERCENTAGES OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS SHOWING VARIOUS ATTITUDES TOWARD SCIENCE AS AN ACTIVITY BEFORE AND AFTER EXPOSURE TO THE "SCIENCE AROUND US" SERIES

<table>
<thead>
<tr>
<th>Number of children in classes</th>
<th>Seminar</th>
<th>Non-Seminar</th>
<th>Seminar</th>
<th>Non-Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td></td>
</tr>
<tr>
<td>564</td>
<td>564</td>
<td>310</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>Percentage reported as:</td>
<td>Seminar</td>
<td>Non-Seminar</td>
<td>Seminar</td>
<td>Non-Seminar</td>
</tr>
<tr>
<td>Liking science very much</td>
<td>31%</td>
<td>46%</td>
<td>44%</td>
<td>53%</td>
</tr>
<tr>
<td>Mildly liking science</td>
<td>37</td>
<td>33</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>Indifferent toward science</td>
<td>20</td>
<td>16</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Mildly disliking science</td>
<td>8</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Disliking science very much</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Summary.** In the total group of children tested, there was a gain in the proportion liking science as an activity after the presentation of the "Science Around Us" telecasts. This result was found in all three grades in similar degree. Both the children of the non-seminar and the seminar teachers
showed a gain in liking for science as an activity following the series.

Results for the Second Question

2. "What was the degree of interest children showed in scientific aspects of daily life before and after "Science Around Us?"

The results for this question are presented in Table 28.

Findings. Well over half of the 874 children observed by teachers reporting were very interested in scientific aspects of daily life prior to the series. Combining the "extremely interested" and "quite interested" groups, an increase from 60 to 78 per cent showed in the size of the group interested in the scientific aspects of daily living after the science series; an increase of 18 per cent.

<table>
<thead>
<tr>
<th></th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>874</td>
<td>874</td>
</tr>
<tr>
<td>Percentage reported as being:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely interested</td>
<td>27%</td>
<td>33%</td>
</tr>
<tr>
<td>Quite interested</td>
<td>33</td>
<td>45</td>
</tr>
<tr>
<td>Indifferent</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Quite disinterested</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Extremely disinterested</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Effort was made on all of the programs to emphasize the importance and significance of science in all phases of daily life. This possibly could have been a factor influencing the growth of those more interested in scientific aspects of living following the series. Teachers possibly placed greater emphasis on this part of science as well. The teachers might have shown some bias in their reply to this question, for they were evaluating their own children, and their own teaching methods. The evidence obtained suggests a rise in the number of children who were interested in the scientific aspects of daily living from 60 per cent to 78 per cent after the science telecasts.

Variations. There were similar gains in the three grade groups studied, with no major differences among the three grades. Children in the fourth, fifth, and sixth grades showed a tendency to become more interested in the scientific aspects of life after the science series.

Variations between the seminar and the non-seminar groups are presented in Table 29. As the table shows, some differences existed for the seminar and non-seminar groups on this question. Children observed by the seminar teachers were reported as showing more gain than those reported by the non-seminar teachers. The seminar teachers showed an 18 per cent gain in the size of the group interested in the scientific aspects of living, while the non-seminar groups' gain was 14 per cent. This difference was not significantly large.
TABLE 29.

THE PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS EVIDENCING VARYING DEGREES OF INTEREST IN SCIENTIFIC ASPECTS OF DAILY LIVING BEFORE AND AFTER EXPOSURE TO THE SCIENCE SERIES

<table>
<thead>
<tr>
<th>Total number of children in classes</th>
<th>Seminar Before</th>
<th>After</th>
<th>Non-Seminar Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>564</td>
<td>564</td>
<td>310</td>
<td>310</td>
</tr>
</tbody>
</table>

Percentage evidencing they were:

- Extremely interested: 26% 34% 32% 34%
- Quite interested: 33 43 37 49
- Indifferent: 28 17 24 14
- Quite disinterested: 9 4 6 3
- Extremely disinterested: 4 2 1 --

In the opinion of the writer, the difference could be due to the fact that the seminar teachers had closer contact with the master teacher, and the content of the series, as well as resource people connected with it. The teachers might have been influenced concerning the importance of science in daily life and, in their teaching, passed this concern on to their children. Non-seminar teachers, not subject to this influence, possibly emphasized this less.

Summary. In the total group of children tested, there was an increase in the number of children who were more than casually interested in the scientific aspects of living
following the science telecasts. A similar tendency existed for all of the three grades tested, and for the seminar and non-seminar groups, with a slightly higher figure for the seminar children. This difference was not significantly large.

Results for the Third Question

3. "What degree of interest did the children show in their natural environment before and after the science series?"

The results for this question are presented in Table 30.

**TABLE 30.**

PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARIOUS DEGREES OF INTEREST IN THEIR NATURAL ENVIRONMENT BEFORE AND AFTER EXPOSURE TO THE SCIENCE SERIES

<table>
<thead>
<tr>
<th></th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>874</td>
<td>874</td>
</tr>
<tr>
<td>Percentage reported as being:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely interested</td>
<td>37%</td>
<td>42%</td>
</tr>
<tr>
<td>Quite interested</td>
<td>36</td>
<td>41</td>
</tr>
<tr>
<td>Indifferent</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Quite disinterested</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Extremely disinterested</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Findings. About two-thirds of the 874 children observed by their teachers were interested in their natural environment prior to the science telecasts. Before the series 73 per cent of the children showed interest, and after the series this figure increased in the total group to 83 per cent, a gain of 10 per cent. This gain may or may not be attributed to the science series, since other factors undoubtedly influenced the children at this time. During the eleven weeks of the series, however, 10 per cent more children became interested in their natural environment to some degree.

Variations: The sixth grade showed a slightly higher percentage of children interested in their natural environment after the series than either the fourth or fifth grade. This difference was not significantly large.

The variation between the seminar and the non-seminar groups is presented in Table 31.

There was some difference between the seminar and non-seminar group for this question. The seminar teachers reported an 11 per cent gain in the size of the group of students interested in their natural environment after the series. The non-seminar teachers reported a 4 per cent increase, with a 3 per cent drop in the size of the group which was "extremely interested" in the series.

It is the opinion of the writer that the seminar group's gain was due to closer contact with the master teacher, and
other teachers in the seminar in preparation for the series. Non-seminar teachers did not have this contact.

TABLE 31.

PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS AS EVIDENCING VARIOUS DEGREES OF INTEREST IN THEIR NATURAL ENVIRONMENT BEFORE AND AFTER EXPOSURE TO THE "SCIENCE AROUND US" SERIES

<table>
<thead>
<tr>
<th>Percentage reported as being:</th>
<th>Seminar Before</th>
<th>Seminar After</th>
<th>Non-Seminar Before</th>
<th>Non-Seminar After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>564</td>
<td>564</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>Percentage reported as being:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely interested</td>
<td>31%</td>
<td>40%</td>
<td>46%</td>
<td>43%</td>
</tr>
<tr>
<td>Quite interested</td>
<td>39</td>
<td>41</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>Indifferent</td>
<td>21</td>
<td>15</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Quite disinterested</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Extremely disinterested</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Summary. In the total group of 874 children observed, there was a tendency for more children to be interested in their natural environment after the series. The gain was slightly higher in the sixth grades, but all grades showed tendency towards becoming more interested in their natural environment after the telecasts. The seminar teachers' children showed more tendency towards being interested in their natural environment after the series than did the non-seminar children, but this difference was not large.
Results for the Fourth Question

4. "How well informed were the children concerning scientific phenomena before and after the science series?"

The results for this question are presented in Table 32.

TABLE 32.
THE PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARYING AMOUNT OF INFORMATION CONCERNING SCIENTIFIC PHENOMENA BEFORE AND AFTER EXPOSURE TO THE "SCIENCE AROUND US" SERIES

<table>
<thead>
<tr>
<th></th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>The total number of children in classes</td>
<td>874</td>
<td>874</td>
</tr>
<tr>
<td>Percentage reported as being:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very well informed</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>Quite well informed</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>Indifferent</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>Quite poorly informed</td>
<td>27</td>
<td>17</td>
</tr>
<tr>
<td>Very poorly informed</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

Findings. In the entire group of 874 children observed, the number who were informed concerning scientific phenomena increased from 39 per cent before the series to 61 per cent after the series. This represents a 22 per cent gain, one which is significantly large.

It is possible that many factors were responsible for this gain in the number of children being informed concerning
scientific phenomena. Effective teaching, the television programs, or a combination of the two could have been responsible, plus some bias on the part of the teachers reporting, since their own teaching was, in a sense, being evaluated.

Variations. All of the three grade groups tested showed a similar tendency toward more children showing a certain degree of information about scientific phenomena after the telecasts.

The seminar and non-seminar groups showed no significant variation for this question. Both groups were reported as showing a higher number of children with information concerning scientific phenomena after the science series.

Summary. Children reported in the group of 874 fourth and fifth and sixth grades showed a tendency to increase in the number who were informed about scientific phenomena after the science series had ended. This held true equally in the grades groups, and in the seminar and non-seminar groups.

Results for the Fifth Question

5. "To what extent did the children suspend judgment on a problem before and after the science series?"

The results for this question will be found in Table 33.
### TABLE 33.
PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARIOUS DEGREES OF SUSPENDING JUDGMENT ON PROBLEMS BEFORE AND AFTER EXPOSURE TO THE "SCIENCE AROUND US" SERIES

<table>
<thead>
<tr>
<th>Total number of children in classes</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>874</td>
<td>874</td>
<td></td>
</tr>
</tbody>
</table>

**Percentage evidencing they:**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always suspend judgment</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>Quite often suspend judgment</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>Barely suspend judgment</td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td>Occasionally make snap judgments</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>Make frequent snap judgments</td>
<td>29</td>
<td>18</td>
</tr>
</tbody>
</table>

**Findings.** In the total group of 874 children observed by their teachers, only 21 per cent were reported as suspending judgment on problems to any degree prior to the series. This increased after the series to 43 per cent.

The science series emphasized the value of scientific reasoning, and the master teacher stressed frequently that good scientists never made up their minds until many facts had been weighed and a number of experiments conducted. Various factors undoubtedly influenced the children during the eleven weeks of the science series; any of these might have been in part responsible for the increase in the number of children suspending judgment on problems. The science
series undoubtedly was one of the factors.

**Variations.** All of the three grade levels reported in the study showed an increase in the proportion of children who withheld judgment on problems after the series. There was no significant variation.

The children reported by the seminar teachers showed a slightly higher percentage of children withholding judgment than those of the non-seminar group, but this difference was not significantly large. Both groups reported an increase in the number of children who withheld judgment following the "Science Around Us" series.

**Summary.** Children in the total group reported by their teachers showed a tendency to increase in the number withholding judgment on problems following the series. This was equally true for fourth, fifth, and sixth grades, and for the seminar and non-seminar groups.

Results for the Sixth Question

6. "How well did the children work together on group projects in science before the science series?"

The results for this question are presented in Table 34.

**Findings.** As the table shows there was a very high percentage of children who were cooperative on group projects prior to the series as well as after it. Prior to the series, the teachers reported 68 per cent of their children as being "cooperative" in group work. Following the series, this figure rose to 75 per cent.
TABLE 34.

THE PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS EVIDENCING VARIOUS DEGREES OF COOPERATION ON GROUP PROJECTS IN SCIENCE BEFORE AND AFTER EXPOSURE TO THE SCIENCE SERIES

<table>
<thead>
<tr>
<th>Number of children in classes</th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>874</td>
<td>874</td>
</tr>
</tbody>
</table>

Percentage reported as being:

- Very cooperative: 34% (Before), 42% (After)
- Quite cooperative: 34 (Before), 33 (After)
- Indifferent: 18 (Before), 16 (After)
- Quite uncooperative: 11 (Before), 8 (After)
- Very uncooperative: 3 (Before), 1 (After)

Variations. Fourth, fifth, and sixth grade classes tested showed about equal tendency for slight gains in the number of children reported to be cooperative. There was no significant variation among the grades.

Children of the seminar and non-seminar teachers seemed to gain in number reported as being cooperative following the series in about the same proportion. Gains for both groups were very small.

Summary. Over half of the children reported on were cooperative in group work both before and after the series. Increases in the number of children who were cooperative
after the series were quite small in all cases. Increases were not sufficiently large to be significant.

Results for the Seventh Question

7. "How much importance did the children place upon science before and after the science series?"

The results for this question are presented in Table 35.

TABLE 35.
PERCENTAGE OF CHILDREN IN TEST CLASSES REPORTED BY TEACHERS AS PLACING VARYING DEGREES OF IMPORTANCE UPON SCIENCE BEFORE AND AFTER EXPOSURE TO THE "SCIENCE AROUND US" SERIES

<table>
<thead>
<tr>
<th></th>
<th>Before Series</th>
<th>After Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children in classes</td>
<td>853</td>
<td>853</td>
</tr>
<tr>
<td>Percentage reporting that science was:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very important</td>
<td>51%</td>
<td>63%</td>
</tr>
<tr>
<td>Quite important</td>
<td>38</td>
<td>33</td>
</tr>
<tr>
<td>Not important</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

Findings. In the total group of 853 children observed by their teachers (one seminar teacher failed to report on this question), 12 per cent more children were reported as regarding science as "very important" following the series than had done so prior to it. The size of the group reported who felt that science was "not important" diminished
from 11 per cent to 4 per cent after the series.

During the programs the master teacher frequently pointed out significant discoveries made by scientists, mentioning how these discoveries affected our lives. In addition, items of this kind were emphasized on the information sheets for each of the programs. This increase may then be the result of the series, of the emphasis teachers placed on science, or a combination of the two.

**Variations.** All of the three grades reported by their teachers showed more children who regarded science as "important" following the series. The sixth grades showed a higher number of children regarding it as "important", but this difference was not significantly large. Results were very similar for fourth and fifth grade children.

Both the children in the seminar and the non-seminar teachers' groups showed an increase in the number who regarded science as "important" after the science series. The seminar teachers' children showed slightly higher gains in this respect, but the difference was slight.

**Summary.** Children of the thirty-one teachers reporting showed an increase in the number who regarded science as important following the close of the science telecasts. The number increased to a significant degree. Children showed similar increases in the three grades groups observed, and in the seminar and non-seminar groups.
Summary of the Second Evaluation

The reports of the thirty-one teachers submitted before and after the science series indicate that the classroom telecasts in science had observable effects on the interests of the children who viewed them. There was a visible increase in the number of children who were interested in matter pertaining to science following the "Science Around Us" series. Similarly, more children were disposed to regard science as "important" after the series than prior to it.

Teachers' reports from the first evaluation indicated a strong tendency on the part of the children to follow through on experiments which the master teacher performed on the programs. They reported an increased tendency for children to do further exploration in the subject areas covered on television. This increase in experimentation, perhaps due to the extra motivation of the television programs, could account, in part, for some of the change in interest toward science displayed by the children found in this second evaluation. It is possible that the TV lessons provided interesting new stimuli which opened up new avenues of exploration and experimentation for the children.

Information was secured by teachers who observed their students before and after the series, and who then reported these observations. About half of these teachers helped plan the series. This method has limitations. It is subject
to bias on the part of the teachers reporting, and to chance differences. Further, the reliability of the information depends upon the degree of accuracy with which the teachers were able to observe and note the attitudes and interests of their pupils toward science on two occasions: prior to, and after the science series. Reliability of the results also depends upon the degree of objectivity the teachers were able to maintain throughout the evaluation.

In the opinion of the writer, it seems rather significant that both the seminar and the non-seminar teachers reported very similar results with respect to most of the questions discussed, and that these results relate to the findings of the first evaluation. Within the limitations imposed by the methodology used, it is the writer's belief that the science series had an appreciable effect on the interests of the children who viewed it, although other influencing factors were admittedly present.

The Third Evaluation Procedure

The first evaluation sought the teacher's reactions to individual science telecasts. It used questionnaire reports from nineteen seminar teachers. The second evaluation also used the questionnaire method, in which thirty-one teachers reported on the effect of the series on the attitudes and interests of their fourth, fifth and sixth grade children. As in the preceding evaluations, the third evaluation was
based on reports given by teachers. The third evaluation was a study of the effects of the series on the interests of the teachers who observed their children in the previous evaluation.

**Description of Methodology Used**

The third method of evaluation used a questionnaire to be filled out by teachers using the science series, to secure information concerning the extent and nature of the influence of the "Science Around Us" series on the teachers themselves, who used it in their classrooms.

Each teacher filling out a questionnaire was asked to give information concerning:

a. The amount of time provided by the teacher for science activity.
b. The planning techniques used by the teacher.
c. The teacher's concept of how learning experiences might be provided to the children in science.
d. Materials used by the teacher in teaching science.

Two weeks before the first science telecast, a questionnaire was sent to each of the nineteen seminar teachers and to forty-five other teachers who had indicated an interest in the series, asking for information concerning the methods used by the teachers in handling science activities in their classrooms. Usable questionnaires were returned by all of the seminar teachers, and by twelve of the others to whom materials had been sent.

Then, two weeks after the completion of the science
series, an identical questionnaire was sent to the thirty-one teachers who had returned the first form. Of these, twenty-eight returned usable questionnaires—the nineteen teachers enrolled in the special science seminar, and nine non-seminar teachers. The material in the third evaluation is based on the information provided before and after the science series by these twenty-eight teachers.

The questionnaire used asked for "discussion type" answers to questions in five areas. (A copy of the questionnaire used appears in Appendix B.) The information provided was of such a nature as to make tabulation of results impossible. Results of the evaluation are presented separately for each group of questions asked in the sections that follow.

Results of the Third Evaluation

Results for Section A. Questions concerning the nature of science experiences, and the amount of time devoted to science activity were asked in this section of the questionnaire.

Time devoted to science activity in the classroom by teachers using the science series was definitely increased. Of the twenty-eight teachers reporting, twenty-four reported increased time devoted to classroom science activities after the series. The average increase for each of these twenty-four teachers was approximately one hour and sixteen minutes
per week, or 54 per cent of the average amount of time used before the start of the televised series. A greater increase was reported by the nineteen seminar teachers than by the non-seminar teachers, but the difference was slight.

Science topics included by teachers in the study showed some change following the series. Topics included many which had been used on the TV series. Areas of study were definitely related to the topics covered in the TV lessons. Answers to this question indicated that both teacher groups were applying material from the television programs in their classes following the end of the series. Teachers used more democratic techniques to select topics after the series.

Results for Section B. This section asked questions concerning the goals and objectives for science study. Twenty-four of the twenty-eight teachers felt that the science program in their particular schools was inadequate. The high points of a science program which they felt would remedy the faults included ideas such as: 1.) providing more units in science, 2.) giving more good class demonstrations, and 3.) encouraging more children to do individual experimentation in science. The use of outside authorities, and greater use of radio and television in the classes was also suggested. Most of the teachers felt that an adequate budget would have to be provided for science, so that field trips could be taken, better films secured, and good demonstration equipment purchased for each science room. Most of the answers indicated that the teachers had a strong desire
to provide more imaginative and effective science offerings to their classes.

Teachers in all of the grades, and in both groups, concurred that there were some attitudes concerning science which they gave effort to developing in the child. These new attitudes were most frequently mentioned:

1. The development of critical thinking.
2. Appreciation of the world in which we live.
3. Open-mindedness for new discoveries and facts.
4. The avoidance of emotional thinking.

Prior to the series, only one or two teachers mentioned the above attitudes.

Results for Section C. Questions were asked concerning materials used for science activity in section C. of the questionnaire. Teachers in both groups experienced a change of opinion concerning the materials needed for achieving the objectives of a science program in the intermediate grades. Prior to the series, many of the twenty-eight listed standard laboratory equipment as being needed. Following the series most of these mentioned how surprised they were that so much could be accomplished using simple, easy to acquire materials. Seminar teachers experienced a higher degree of change for this question than did non-seminar teachers. In the writer's opinion this was due to the fact that seminar teachers made extra discoveries of this type while planning the content of the science series in the seminar meetings.

Results for Section D. This section asked questions covering the planning of science activity. Teachers' answers
to the two questionnaires showed a tendency to use more
democratic techniques in the planning of science activities
after the series. This was equally true for seminar and
non-seminar teachers, with the seminar teachers showing a
slightly stronger tendency in this direction. More concern
for the interests and needs of the children was shown by
both groups of teachers following the science telecasts.
Teachers felt both before and after the series that general
planning was very important, with some day to day planning
for revisions and meeting of special needs.

Results for Section E. Questions concerning the place
of science in the curriculum were asked in section E. of the
questionnaire. Answers given to this question indicated
both before and after the series that teachers in both groups
felt science was an important activity. The answers given
by many of the teachers as to why science should be taught
in the upper elementary grades were different at the close of
the series. In general their reasons ran along these lines
prior to the series:

1. To provide knowledge of scientific principles.
2. To teach an understanding of science.
3. To emphasize the importance of science.
4. To provide knowledge about great scientists.
5. To teach application of science to everyday
   life.

Following the science telecasts, new reasons were added.
They included:

1. To develop the scientific attitude in children.
2. To broaden the child's interests in the world
   around him.
3. To develop the ability to solve problems scientifically.
4. To stimulate activity into other areas of study.

Most of the above concepts were either in the teacher's manual or expressed by the master teacher on the television programs. Answers to this question indicated that the teachers had grasped some of the underlying principles of the science series and applied them to their own science activities. This seemed true to about the same extent for both the seminar and the non-seminar teachers.

Summary of Third Evaluation

The study of the effect of the science series on the interests of twenty-eight teachers indicated that the classroom telecasts contributed to certain changes in the teaching patterns and the attitudes of the teachers using the program. Definite changes were found in the attitudes of the teachers after the series. Teachers devoted more time to science activity, used more democratic planning and teaching techniques, and showed more concern for the interests and needs of the children. They showed evidence of a greater variety of concepts for providing learning experiences for the children following the series. Information secured from the teachers shows that the series served as an "in service" teaching device as well as a supplement to the science curriculum, since teachers gained new insights
concerning teaching techniques in science.

The increased emphasis on development of scientific attitude by the teachers studied possibly accounts for the increase in the proportion of pupils suspending judgment on problems found in the second evaluation. It seems logical to assume that the increased amount of time devoted to science activity, the extra emphasis by teachers on scientific attitude, and the use of more democratic planning and teaching techniques could be related to the increase in the number of children showing liking for science activity, and the increased interest in things pertaining to science which was found in the second evaluation. Changes were noted in the third evaluation which indicated growth on the part of the teachers. These changes were evidenced by the fact that teachers reported using new techniques and ideas which had been suggested and used on the "Science Around Us" programs.

The method used in this evaluation may be open to criticism. The information was secured from teachers by means of questionnaires. In a sense, the teachers were evaluating their own teaching techniques. Thus, the reliability of the information received depends upon the degree of objectivity the teachers were able to maintain in answering the questions asked of them both before and after the science series. Answers on the second questionnaire were expected to be somewhat different from those on the first one due to chance alone. The possibility for bias is present
in this method, for teachers could have given answers which they felt the writer might want.

It seems important to the writer that the changes in the teaching patterns and interests of the teachers studied bear relationship to the changes in interest in science found in the second evaluation. The second evaluation found that more children were interested in scientific activity after the series than before it, and the third evaluation pointed out that the teachers did change their techniques and used more time for science activity.

The Fourth Evaluation Procedure

Previously mentioned evaluations of the science series have dealt with reactions of teachers to individual programs, their conclusions concerning effects which the series had on the interests and attitudes of pupils using the telecasts, and the effects of the series on methods used by the teachers themselves. The fourth appraisal was designed to cover a more general area, seeking the reactions of teachers to the entire series of programs taken as a whole, made by each of a group of eighty-two teachers who had viewed the "Science Around Us" telecasts with their classes.
Description of Methodology Used

Both general and specific information was sought concerning the series; information which would be useful to the Ohio School of the Air staff in the preparation and production and future classroom telecasts.

Series evaluation questionnaire forms similar to those distributed for the "Art Workshop" series were prepared. Fifteen questions were asked the teachers. Completion type, multiple choice, and "yes" and "no" questions were used on the form. Information sought included the number of programs watched by each teacher, how many children viewed the programs, whether the ideas presented were usable, the educational value of the series, in what ways the series was useful, the effect of the series on the children, effectiveness of the children on the programs, and the programs the children liked best and least in the series.

These questionnaire forms were mailed to a sample of one hundred teachers who had used the series. Teachers were selected at random from the mailing list used for the teachers' manuals. Seminar teachers also completed this form. Questionnaires were mailed two weeks after the last program of the science series. Sixty-three usable questionnaires were returned by the non-seminar teachers, and nineteen by the seminar teachers. The total usable questionnaires was eighty-two. (A copy of the science questionnaire form is
Findings of the Fourth Evaluation

The findings of the fourth evaluation will be reported on a question by question basis.

**Set Ownership in Schools.** Of the eighty-two teachers reporting, 85 per cent said schools they represented owned at least one television set. About 10 per cent of this number said they had two sets. The remaining 15 per cent watched the series by means of borrowed sets. The most popular sized set was the twenty-one inch screen. About 30 per cent of the included schools used this type, with the remainder using sets with seventeen inch screens.

**Number of Programs Viewed.** Both the seminar and non-seminar teachers watched a large percentage of the programs. About 89 per cent of the teachers saw all eleven of the programs with their classes, 8 per cent saw only nine, and the remainder watched eight. The size of the average classroom audience watching "Science Around Us" was thirty-six children per classroom.

**Reactions of Teachers to the Ideas Used in the Series.** The results for this question are presented in Table 36. Both groups of teachers were able to use the ideas in their classes. Both showed that the ideas used on the series bore definite relationship to the activities of their classes. The seminar teachers showed higher percentages, but the
difference was not large.

TABLE 36.

REACTIONS OF SEMINAR AND NON-SEMINAR TEACHERS TO THE IDEAS USED ON "SCIENCE AROUND US"

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of teachers reporting</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>Percentage reporting they</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were able to use the ideas in classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly</td>
<td>74%</td>
<td>50%</td>
</tr>
<tr>
<td>To some degree</td>
<td>26</td>
<td>50</td>
</tr>
<tr>
<td>Found ideas related to class work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly</td>
<td>53%</td>
<td>50%</td>
</tr>
<tr>
<td>To some degree</td>
<td>42</td>
<td>36</td>
</tr>
<tr>
<td>Not at all</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Were able to relate ideas to class work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly</td>
<td>53%</td>
<td>28%</td>
</tr>
<tr>
<td>To some degree</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>

The Educational Value of the Series as a Teaching Aid. The results of this portion of the questionnaire are shown in Table 37.
The majority of the eighty-two teachers reporting felt that the series was an "excellent" or "very good" teaching aid in science. Eighty per cent of the seminar group was of this opinion, while 60 per cent of the non-seminar group felt the same way. A small percentage of both groups rated the series as "average" or "fair" as a teaching aid.

**Educational Value of the Series as a Means of Enriching the Science Curriculum.** Results for this part of the questionnaire are shown in Table 38.

The majority of the eighty-two teachers felt that the science series was an "excellent" or "very good" means of...
TABLE 38.
EDUCATIONAL VALUE PLACED ON "SCIENCE AROUND US"
AS A MEANS OF ENRICHING THE SCIENCE CURRICULUM BY SEMINAR AND NON-SEMINAR TEACHERS

<table>
<thead>
<tr>
<th>Total number of teachers reporting</th>
<th>Seminar Group (19)</th>
<th>Non-Seminar Group (63)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage describing the series as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>58%</td>
<td>50%</td>
</tr>
<tr>
<td>Very good</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>Average</td>
<td>--</td>
<td>7</td>
</tr>
<tr>
<td>Fair</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Poor</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

enriching the science curriculum. Seminar and non-seminar teachers showed only a small variation on this question, with the non-seminar teachers rating the series slightly lower as a means of enriching the science curriculum than did the seminar group.

Ways in Which the Teachers Found the Series Helpful. The seventh question asked the teachers to check as many of the answers on the form as they felt expressed their opinions as to how the series had been of aid to them. Table 39 shows the results for this question.

There was very little difference between the answers
TABLE 39.

SPECIFIC WAYS IN WHICH SEMINAR AND NON-SEMINAR TEACHERS WHO USED THE "SCIENCE AROUND US" SERIES FOUND IT HELPFUL

<table>
<thead>
<tr>
<th></th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of teachers reporting:</strong></td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td><strong>Percentage who said the series:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided a wider background of information in science</td>
<td>100.0%</td>
<td>93.0%</td>
</tr>
<tr>
<td>Stimulated the children to further exploration in science</td>
<td>88.5</td>
<td>85.0</td>
</tr>
<tr>
<td>Stimulated pupils to do more reading in the science area</td>
<td>68.5</td>
<td>43.0</td>
</tr>
<tr>
<td>Brought resources in science to the classroom which teacher could not bring</td>
<td>95.0</td>
<td>93.0</td>
</tr>
<tr>
<td>Showed the children how to solve their problems in a scientific manner</td>
<td>58.0</td>
<td>64.0</td>
</tr>
<tr>
<td>Others</td>
<td>53.0</td>
<td>85.0</td>
</tr>
</tbody>
</table>

of the seminar and non-seminar teachers for this question. Both groups of teachers checked most of the answers provided. Both agreed the series had provided a wider background of information in science, stimulated interest in further exploration in science, stimulated pupils to do more reading in the area of science, and that the series brought resources in science to the classes which the teachers could not provide.
Benefits the Children Received from the Science Series.

The questionnaire sought in this portion, to find out if the teachers had observed any change in their children's attitude towards science as an activity. The question asked the teachers to answer "yes" or "no" or "to some degree" to statements showing possible results in the children. The responses of both groups' teachers to this questionnaire are shown in Table 40.

Both the nineteen seminar and sixty-three non-seminar teachers felt that their children showed definite increases in all of the items given on the questionnaire. Percentages for the seminar group ran a little higher to "yes" answers than did the non-seminar group for most of the answers, but the differences were not great. Seminar and non-seminar teachers felt that as a result of the series their children were showing an increased interest in science as an activity, an increased interest in their environment, an increased recognition of the importance of science, an increased ability to see the relationship of science to daily living, and an increased ability to use scientific reasoning to solve problems. The answers to this question indicated that teachers in both groups saw positive values to their children from the science programs.

Value of the Children Appearing on the Programs. One section of the questionnaire related to the appearance of children on the science telecasts. The teachers were asked,
TABLE 40.

BENEFITS WHICH CHILDREN RECEIVED FROM VIEWING THE "SCIENCE AROUND US" SERIES AS REPORTED BY SEMINAR AND NON-SEMINAR TEACHERS

<table>
<thead>
<tr>
<th>Total number of teachers reporting</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage saying children had:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased interest in science</td>
<td>36% 64% 0</td>
<td>50% 43% 7%</td>
</tr>
<tr>
<td>Increased interest in their environmen</td>
<td>47 53 0</td>
<td>43 35 21</td>
</tr>
<tr>
<td>Increased interest in scientific aspects of daily life</td>
<td>26 74 0</td>
<td>57 43 0</td>
</tr>
<tr>
<td>Increased ability to use scientific reasoning to solve problems</td>
<td>26 63 11</td>
<td>20 67 13</td>
</tr>
<tr>
<td>Increased tendency to test and weigh evidence</td>
<td>36 49 15</td>
<td>25 67 8</td>
</tr>
<tr>
<td>Increased recognition of the importance of science</td>
<td>64 36 0</td>
<td>56 44 0</td>
</tr>
<tr>
<td>Increased ability to see the relationship of science to daily life</td>
<td>53 47 0</td>
<td>52 47 1</td>
</tr>
</tbody>
</table>
"On the basis of student reaction, did the children on the programs add to the general effectiveness of the series?"

Seminar and non-seminar teachers voted much the same for this question, with about 65 per cent of them answering "yes" and the remaining 35 per cent "to some degree", showing they felt the children added effectiveness to the programs. More specific reasons were sought by means of a check system, in which four possible values were suggested. Teachers were to check only the values which they felt were appropriate. Table 41 presents their replies to this second part of the question.

TABLE 41.
WAYS IN WHICH SEMINAR AND NON-SEMINAR TEACHERS FOUND THE CHILDREN APPEARING ON THE TV PROGRAMS TO BE EFFECTIVE

<table>
<thead>
<tr>
<th></th>
<th>Seminar</th>
<th>Non-Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of teachers reporting:</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>Percentages saying the children:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Added variety and real classroom atmosphere to the programs</td>
<td>58%</td>
<td>58%</td>
</tr>
<tr>
<td>Gave classroom children confidence to try science experiments</td>
<td>28</td>
<td>42</td>
</tr>
<tr>
<td>Provided identification for the classroom children</td>
<td>85</td>
<td>65</td>
</tr>
<tr>
<td>Provided a means for participation by their own classroom children</td>
<td>85</td>
<td>77</td>
</tr>
</tbody>
</table>
Both groups of teachers felt that children were effective on the programs in several ways. Teachers felt equally that the TV children provided a means for a sense of participation for their own classroom children. A substantial percentage of both groups of teachers believed the TV children gave their own children a feeling of confidence to try the experiments.

Evaluation of the Science Series as a Whole. Another question asked for information about what the teachers thought of the "Science Around Us" series taken as a whole. From a list of eleven statements, describing various possible reactions to the series, each teacher was asked to check those statements which she felt were appropriate. Table 42 presents the results of this question.

The eighty-two teachers reporting were in general agreement that the television series in science had been a definite aid to their teaching, and to their children. Over half the teachers in both groups felt that the series fulfilled the objectives which were stated in the science manual, and over half said it helped in the science instruction. It is significant that the teachers in both groups found that the series was of a rather lasting value to their classes as specific education, background enrichment, in improving science attitudes, and in the stimulation of individual research in science.

Programs Which Were Liked Most and Least. In rating
TABLE 42.

SEMINAR AND NON-SEMINAR TEACHERS' EVALUATION OF THE "SCIENCE AROUND US" SERIES TAKEN AS A WHOLE

<table>
<thead>
<tr>
<th>Total number of teachers reporting</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
<td>63</td>
</tr>
</tbody>
</table>

Percentage saying the series:

<table>
<thead>
<tr>
<th>Fulfilled objectives stated in manual</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>57%</td>
<td>64%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Helped in the science instruction</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>79</td>
<td>63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributed very little the teacher couldn't cover</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Was below the maturity level of the class</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Was above the maturity level of the class</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Was of temporary value to the class</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Was of permanent value to the class as:</th>
<th>Seminar Group</th>
<th>Non-Seminar Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific education</td>
<td>50</td>
<td>41</td>
</tr>
<tr>
<td>Background enrichment</td>
<td>79</td>
<td>84</td>
</tr>
<tr>
<td>A means of improving science attitudes</td>
<td>59</td>
<td>62</td>
</tr>
<tr>
<td>A stimuli for individual research in science</td>
<td>78</td>
<td>73</td>
</tr>
</tbody>
</table>

reactions of pupils to individual programs in the science series, all eighty-two teachers said their children liked the
final program in the series best. This program dealt with
astronomy, the second of the two covering the subject. The
program which was liked second best by the seminar group
was program 8, which dealt with animals and pets. The non-
seminar children liked program 3 best. It featured some
experiments in electricity. All three of these programs
featured interesting experiments, and used a wide variety of
visual materials.

The seminar and non-seminar children liked program 4
least of all. It dealt with a summarization of the unit on
television, and was termed by most teachers as being "over
the heads" of their classes. Visual material did not show
up well on this program, which was too complicated to be
handled effectively with one camera.

Teachers' Interest in Future Classroom Television
Programs. One hundred per cent of the teachers reporting
stated that they wanted another series of television pro-
grams in science the following fall, and all of the teachers
stated that their children had enjoyed the science telecasts.

Summary of the Fourth Evaluation

The fourth evaluation, seeking the reactions of eighty-
two teachers to the science series taken as a whole, found
that the majority reporting felt the programs had been of
value both as supplementary teaching aid and as a means of
enriching the science curriculum in the fourth, fifth and
sixth grades. Most of the schools studied owned television sets; those which did not, secured sets by borrowing or renting them from dealers or P.T.A. homes. The majority of teachers reporting felt the series had lived up to the objectives set forth in the "Science Around Us" teachers' manual.

The fourth evaluation found that teachers who used the science series were impressed favorably with television as a teaching aid. Certain findings of this evaluation agree with four from the first evaluation:

1. Teachers were able to use the ideas presented on the television programs in their classes.

2. Teachers felt that the educational value of the science programs was high.

3. The programs stimulated individual research and reading in science.

4. Program number eleven, which dealt with Astronomy, was the most popular.

The similarity of these answers on the two separate evaluations tends to show that the seminar teachers' reactions as reported may not have been unduly biased, since the teachers reporting in evaluation four were predominantly non-seminar.

In the opinion of the writer, it is significant that this group of teachers, comprised mostly of non-seminar teachers, placed high value on the series, and showed strong interest in continuing the classroom telecasts in science another year.
The Fifth Evaluation Procedure

Evaluations one through four have been primarily concerned with the reports and observations of teachers. No direct reports from intermediate grade children concerning their reactions to the science telecasts have been included thus far, although teachers did report on the effect which the series had on the interests of their children. The fifth evaluation was concerned with an appraisal of individual programs in the "Science Around Us" series based on the direct responses of fourth and fifth grade children who had seen the programs in the series.

A Description of the Methodology Used

As in the case of the art series, the data for this portion of the study was secured by Mrs. Julia R. Gump, a graduate student in the elementary education department at Ohio State University, in cooperation with the writer. A group of thirty-nine fourth grade children and thirty-five fifth graders from the North Linden Elementary School in Columbus were involved in this portion of the study.

Immediately after each science program the two groups viewing the programs were given a rating sheet (identical to the sheet used for "Art Workshop") and were asked to rate the program in terms of their own reaction to program content, development of ideas presented, timing, and materials or
aids used in the demonstrations. The questions were read to them by the teachers and explained in order to avoid misunderstandings. The children were asked for frank criticism.

When the series ended, the children were also asked to evaluate the series as a whole using a questionnaire which they took home to complete. This was done to avoid possible influence by group reaction. The children were told to select the program they liked most, and also the one which they liked least.

Finally, the children's comments and letters were analyzed and noted for their own reactions to the series.

Findings of the Fifth Evaluation

Findings of the fifth evaluation are presented in four parts.

**Evaluation of the Individual Programs.** This part of the study sought children's reactions to the individual programs in the science series. Table 43 presents the results of this part of the study.

The seventy-four children studied showed in their evaluation that the programs were very interesting to them from the very beginning. Children felt the timing of the programs was "about right" so they could follow the ideas presented. Not much variation in the answers to the questions is shown between the fourth and fifth grades.

The criticism and evaluation of these seventy-four
<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Reporting:</td>
<td>61</td>
<td>65</td>
<td>67</td>
<td>70</td>
<td>69</td>
<td>70</td>
<td>72</td>
<td>73</td>
<td>70</td>
<td>73</td>
<td>74</td>
</tr>
<tr>
<td>Percentage stating the program was*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>very interesting</td>
<td>83</td>
<td>60</td>
<td>47</td>
<td>70</td>
<td>78</td>
<td>69</td>
<td>73</td>
<td>83</td>
<td>72</td>
<td>71</td>
<td>91</td>
</tr>
<tr>
<td>interesting</td>
<td>9</td>
<td>23</td>
<td>0</td>
<td>22</td>
<td>15</td>
<td>23</td>
<td>12</td>
<td>12</td>
<td>17</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>good</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>14</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>fair or poor</td>
<td>0</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>They liked the program from the start</td>
<td>63</td>
<td>56</td>
<td>59</td>
<td>60</td>
<td>64</td>
<td>66</td>
<td>68</td>
<td>78</td>
<td>65</td>
<td>79</td>
<td>84</td>
</tr>
<tr>
<td>later in program</td>
<td>30</td>
<td>38</td>
<td>36</td>
<td>34</td>
<td>32</td>
<td>33</td>
<td>28</td>
<td>28</td>
<td>34</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>at no time</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>The program was paced just right</td>
<td>7</td>
<td>13</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>13</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>too slowly</td>
<td>85</td>
<td>73</td>
<td>84</td>
<td>86</td>
<td>82</td>
<td>90</td>
<td>79</td>
<td>86</td>
<td>84</td>
<td>85</td>
<td>96</td>
</tr>
<tr>
<td>too rapidly</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>unevenly</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>The demonstrations showed up very clearly</td>
<td>50</td>
<td>26</td>
<td>34</td>
<td>67</td>
<td>52</td>
<td>59</td>
<td>62</td>
<td>58</td>
<td>66</td>
<td>59</td>
<td>81</td>
</tr>
<tr>
<td>very good</td>
<td>35</td>
<td>27</td>
<td>26</td>
<td>15</td>
<td>30</td>
<td>22</td>
<td>21</td>
<td>16</td>
<td>15</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>good</td>
<td>11</td>
<td>25</td>
<td>23</td>
<td>11</td>
<td>8</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>fair or poor</td>
<td>4</td>
<td>22</td>
<td>17</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
children is quite similar to that reported by the seminar teachers in the first evaluation.

**Evaluation of the Total Series by the Children.** This concerned the appraisal of the series taken as a whole by the seventy-four children in the fourth and fifth grades. Table 44 shows the results.

**TABLE 44.**

FOURTH AND FIFTH GRADE CHILDREN'S RESPONSES TO THE STIMULUS OF TELEVISION PROGRAMS TO READ MORE ABOUT SCIENCE

<table>
<thead>
<tr>
<th></th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of children reporting:</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>Percentage responding:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Yes, I read new science materials.&quot;</td>
<td>92%</td>
<td>60%</td>
</tr>
<tr>
<td>&quot;No, I did not do new reading.&quot;</td>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

As the table shows, the seventy-four children reported they did a great deal of follow-up reading following the television programs. The fourth grade showed 92 per cent were stimulated to do further reading in science, while only 60 per cent were in the fifth grade.

**Programs the Children Liked and Disliked.** Children in
the test group were also asked to point out the programs they liked most and the ones which they liked least in the series. Table 45 shows the results for this question.

Children in both grades preferred programs number 10 and 11 which dealt with astronomy above all others. The review program on television, program number 4, was voted as least popular. It was unpopular with the children because it contained material which had been presented previously, and therefore wasn't new and of interest. The choices of the children were quite similar to those found in the evaluation of the series as a whole by the eighty-two teachers whose reports reflected the likes and dislikes of their classroom children.

Comments of the Children Concerning the Programs.
Comments which the children made about the programs and the series were recorded. Some typical comments and excerpts from letters which were written to those producing the series are quoted below:

"I never realized air was so very important to me."

"While my sister and I did dishes last night we tried to guess what made the different sounds we could hear."

"I liked to try the experiments Mr. Lemmon suggested before the next lesson."

"When the bell jar broke it showed me that things can go wrong for teachers too."

A fifth grade girl showed her dissatisfaction with the topics covered in the series when she wrote:
<table>
<thead>
<tr>
<th>Program Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10 &amp; 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Reporting:</td>
<td>71</td>
<td>73</td>
<td>72</td>
<td>71</td>
<td>71</td>
<td>74</td>
<td>74</td>
<td>70</td>
<td>69</td>
<td>74</td>
</tr>
<tr>
<td>Percentage stating they liked the program best*</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>32</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>Percentage stating they liked the program least</td>
<td>17</td>
<td>3</td>
<td>5</td>
<td>34</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

* Figures shown within the body of the table represent percentages.
"...your program is good, but I feel as several girls in my room do. I'm more interested in things to do with nature. We studied magnetism and to me it was very boring. The language you use is not for our age group. Please have a program on nature."

A sixth grade boy showed his concern for techniques of production in a letter to the producer:

"Dear Sir,

I think your show is very good, but I think you need a new camera man. He doesn't hold the camera steady. Another thing that bothers me is the boom man. When Mr. Lemmon says something interesting I cannot hear it because of the boom man. If you would talk to him I am sure he will understand."

These letters and comments are typical of the many received by the writer during the series and after it had ended. The many letters received indicated a strong measure of loyalty to the program and the teacher. Letters from the teachers using the series indicated that the children were stimulated in thought and action by the ideas expressed on the programs.

Summary of the Fifth Evaluation

This portion of the study found that the children at the North Linden Elementary School enjoyed the science series and found it very interesting. The programs stimulated them to do further reading in the area of science and to do more of the experiments at home and after class. The teachers of the two grades admitted that they spent more time on science as a result of the series.
The greatest number of fourth and fifth grade children liked the programs on astronomy best. The program which reviewed the first three programs was liked least of all. The many letters and comments received showed that the children in the fourth and fifth grades at North Linden learned from the science programs and that they put to work the ideas which they got from watching "Science Around Us."

Chapter Summary

The five step evaluation of the "Science Around Us" series was primarily descriptive. Seminar teachers, their intermediate grade children, and a group of teachers who used the programs, but who had nothing to do with the seminar or with the production and planning of the series, were used in the study. In addition, two teachers in the North Linden Elementary School of Columbus contributed the reactions of their fourth and fifth grade classes to the science evaluation.

The study was concerned with an examination of the effect which the Science Around Us" telecasts had on the interests and attitudes of the children and teachers using them. The effectiveness of individual "Science Around Us" programs, and of the series taken as a whole was examined by the study. In addition, the study examined the reactions of teachers and children to the classroom television programs.
The evaluation of the "Science Around Us" series suggested that the science telecasts had a measurable effect both on the teachers and pupils using them in the classroom. Findings of the five separate evaluations bear a certain relationship to one another. More children liked science activity following the series than prior to it, more showed higher interest in the scientific aspects of daily life, and more of them regarded science as important after the science series. Related to these findings are those of the first evaluation which indicated the pupils showed increased tendency to do further exploration in the subject matter covered on the programs, and findings of the third evaluation which showed that the teachers used more time for science activity after the series, used more democratic planning techniques, and also showed evidence of a greater variety of concepts for providing learning experiences for the children after the "Science Around Us" series. The increased amount of time devoted to science activity, the extra emphasis on scientific attitude, the use of more democratic techniques, bear relationship to the increase in liking for science and the increased interest in scientific phenomena shown by the children studied. It may be assumed that the science series was in part responsible for these changes on the part of teacher and pupils.

Evaluation of the series taken as a whole by a panel of eighty-two teachers who had used the programs in their
classes revealed that the majority of the teachers felt the programs had had specific value both as a means of enriching the science curriculum, and as an in-service device for the teacher. The majority of the teachers felt the series met the objectives set up in the teachers' manual. Interrelated with the findings of this portion of the evaluation were several from the first evaluation which found:

1. Teachers were able to use the ideas presented on TV programs in their classes.

2. Teachers felt the educational value of the science series was high.

3. The programs stimulated individual research and reading in science.

4. Program number 7, which dealt with astronomy was the most popular program.

Direct responses from seventy-four fourth and fifth grade children in the North Linden School in Columbus also tends to substantiate earlier appraisal to the effect that the science programs stimulated the children to science reading, experimentation to further research, and that the pupils studied regarded science as more important following the series. The childrens' reports agreed in most respects with earlier evaluation made by teachers concerning the programs liked most and those liked least. The programs which dealt with astronomy were regarded as most popular in both of the evaluations, while the program presenting a summary of the communications unit and the one on weather forecasting seemed most unanimously disliked. More reading in
science was also done by this group of youngsters following the series.

Other specific findings of the evaluation of the "Science Around Us" programs which are significant are these:

1. Children appearing on the programs added to the interest when they were actively participating in the content of the programs.

2. More children were disposed to regard science as important after the series than prior to it.

3. Most of the teachers felt the science program in their particular schools was inadequate and in need of revision.

4. Teachers showed an increased knowledge in the use of simple easy-to-obtain demonstration materials after the series.

5. Teachers placed new emphasis on the development of the scientific attitude in the children as a goal for science activity after the series.

6. Of the schools involved in the science series study, 85 per cent owned at least one TV set. The 21 inch screen was most popular in these schools.

7. The majority of teachers reported that the "Science Around Us" series had brought science resources into the classroom which they could not have provided.

8. Teachers felt the series had benefitted their pupils in that they showed an increased recognition of the importance of science, an increased ability to see the relationship of science to daily living, and an increased tendency to test and weigh evidence before making decisions.

It is significant that the changes in teaching and planning methods, and in the interests of the teachers bear relationship to the changes in interest and degree of liking for science activity expressed by the children participating
in the appraisals. The changes bear further similarity to those found in the appraisal of the "Art Workshop" series.

Undoubtedly, the "Science Around Us" programs were enjoyed in the classrooms by both the teachers and pupils viewing them; it seems reasonable to assume from the evidence that the programs had a measurable effect on both teachers and pupils who saw them, and that teacher and pupil alike derived benefit from their use in the classroom.
Telecasting to school classrooms is a relatively new endeavor for educators. Due to the newness of school telecasting, and to the fact that such telecasting is being done in comparatively few areas in the country, very little research has been conducted concerning the effectiveness of these programs. The studies so far made have been carried on by those schools and educators producing experimental school series. These studies have contributed to our general fund of knowledge concerning educational broadcasting, and have indicated that television can be used with a certain degree of success as a supplementary aid in school classrooms. Other studies have shown that television can be used in the teaching of adults. Large areas remain unexplored, however. A number of questions concerning the use of television in the school classroom have not been answered.

The writer undertook the present study to examine some of these unexplored areas and to add to the existing fund of information concerning school telecasts. Through the use of questionnaires, rating sheets, observation of children, and discussions with teachers in two special planning seminar groups, the reactions of teachers and their pupils to two series of classroom telecasts were reported and evaluated.
in order to determine the extent to which telecasts of this kind could modify interests and attitudes of children toward art and science activity. Two groups of intermediate grades teachers were organized to aid in the planning and production of the art and science series, in part to discover whether teachers could be an instrumental part of the planning and production of classroom telecasts.

The conclusions of the study are subject to the limitations imposed by the methodology used. It must be remembered that the study pertained only to the intermediate grades in the Columbus, Ohio, area, and to the effects of telecasts in art and science on the intermediate grades children and their teachers. The programs also were the first classroom telecasts the children had ever seen.

Further, the study was conducted by the writer, who also produced the two series. The sample admittedly was rather small, and much of the information used was obtained from teachers who had aided in the planning of the two series of programs; conceivably some bias could be present in the information they gave. In the "before" and "after" comparisons made by the teachers of their own reactions and those of their pupils, it is possible that these cooperating teachers felt that they were passing judgment on their own teaching methods at least as much as on the effectiveness of the telecasts, and set forth their ideas accordingly. It seems significant, however, that the results for the seminar
and the non-seminar teachers and pupils remained rather consistently alike in most of the information provided on the questionnaires and check sheets used.

The following conclusions seem to be justified on the basis of the two, five-step evaluations conducted in this study.

Contributions of TV as a Supplementary Aid in Science and Art Activity

Information received from the seminar and non-seminar teachers and their children indicates that both teachers and pupils derived value from some part of each of the television programs in art and science. The television programs in art and science provided effective motivation for outside activity and additional research, and provided assistance to the pupils and teachers in the intermediate grades as useful, specific education and background enrichment. The study bears out that classroom telecasts can bring stimuli to the pupils and teachers which without television, such groups would not receive. This was certainly true in the case of both "Art Workshop" and "Science Around Us", for the teachers could not have provided the many guests, unusual materials, or the services of the master teachers without the telecasts.

The art and science series, using children before the cameras, gave the classroom children extra incentive to try new techniques in art, and to experiment with various
scientific problems and apparatus. Both series brought out the fact that intermediate grade children seemed more interested in television programs that used children of their own age. Children on the telecasts seemed to lend a note of informality to the programs, and gave classroom viewers assurance that they, too, could do the things the television performers were undertaking. This is one of the values of children appearing on classroom telecasts along with the master teacher.

The Effects of Classroom Telecasts on Attitudes and Interests of Children Toward Art and Science Activity

The classroom telecasts in art and science had appreciable effects on the attitudes and interests of the children who viewed the programs. Teachers reported that more of their children liked both art and science better following the series than prior to seeing the broadcasts. They likewise reported that more of their children regarded art and science as important following the series. More children were reported following the series, as showing a greater regard for their art work and materials, and as regarding their art products as valuable. Children in both the non-seminar and seminar groups were reported as showing a greater interest in art and science activity following the series. More children showed greater interest in scientific aspects
of living after the series in science. The teachers' reports of the activity, reactions, and comments of their pupils in this study indicates that the classroom telecasts did influence the attitudes and interests of the intermediate grades children towards their class subjects in a favorable manner. In addition, the art and science telecasts aroused the curiosity and interest of the children in both subject matter areas. This was evidenced by the increased amount of time they devoted to work in art and science once the telecasts were under way. It seems possible that classroom telecasts could be used to good advantage to raise interest in certain subject matter areas.

The Effect of Classroom Telecasts on the Attitudes and Interest of Teachers Toward Science and Art Activity

The classroom telecasts in art and science had an observable effect on the teachers who used them. The teachers' reports of their own activities and reactions showed a tendency toward a more favorable attitude toward both art and science on their part after the series. This manifested itself in the increased amount of time the teachers spent in the activities in question, in the more democratic techniques used in the planning of class activities, in class management, in the greater variety of devices used for providing art and science learning situations, and in the amount of importance the teacher placed on the two subjects
after the series. The latter affect was shown by the answers teachers gave to a question concerning the reasons art and science should be taught in the intermediate grades. Improved attitudes toward art and science on the part of the teachers could conceivably have been due to the new ideas they received from the series, or to the stimulus of the programs on their children, or a combination of the two.

Classroom telecasts like the art and science series have definite value to the teachers as in-service training devices, bringing to the classroom teacher new ideas in the subject matter, new presentation techniques, and an awareness of new means of stimulating and interesting the student in the subject matter. Both the art and science series were instrumental in providing teachers with new techniques in planning, classroom management, and presentation. If teachers are included in the planning and production of classroom telecasts, as they were in the art and science series, so that their specific needs are made known, such telecasts can be of considerable value to the classroom teacher.

The Attitude of Educators, Teachers, and Pupils Toward the Classroom Telecasts in Science and Art

The school telecasts met with favorable response from the school administrators, supervising teachers, teachers, and pupils connected with the study. Discussions in the seminar, in meetings with school principals in whose schools
the programs were used, and in contacts with parents in the area, indicated to the writer that the school telecasts were regarded as a sound educational device for the classroom. The pupils enjoyed the lessons presented by television, and were eager to have the series of broadcasts continued the following year.

The Feasibility of Educators Planning and Producing Telecasts in Cooperation with Commercial Stations

Educators can plan and produce classroom telecasts using the facilities of commercial stations. The study gave evidence that the Ohio School of the Air, and the Columbus public, parochial, private, and suburban schools could plan and produce classroom television programs on a cooperative basis using the facilities of a local commercial television station.

The Effectiveness of the Seminar Planning and Production Technique for Classroom Telecasts

In conjunction with the secondary purposes of the study, an experiment was conducted with a system of planning classroom telecasts. A special seminar group of twenty teachers was organized for each television series, to aid in planning the content of the programs. The method was used to provide a means of determining the needs and desires of teachers and
children, and to guide the television programs along lines consistent with the school curriculum. The method used achieved very satisfactory results, in terms of relating the program content to the intermediate grades curriculum, and in modifying production techniques to keep the programs interesting and stimulating for the intermediate grades children. In the case of both the art and science series it was found that the seminar teachers aided materially in the planning of the content of the programs, and in suggesting methods of effective presentation.

It may be concluded therefore, that a group of classroom teachers formed into a production and planning seminar under the guidance of a trained television producer can contribute to the planning of classroom telecasts for the enrichment of the curriculum, and the relation of school activities to daily living. In the writer's opinion, this group need not be as large as twenty in number; a smaller number of teachers, carefully selected, could provide equally good results.

The Effect of the Classroom Telecasts in Stimulating Further Activity and Interest in School Telecasting in the Columbus Area

The classroom telecasts stimulated further activity and interest in school telecasting in the Columbus, Ohio, area. The programs were received with considerable interest and
enthusiasm on the part of the educators, teachers, and pupils included in the study. School administrators, and PTA groups were active in providing television sets for the classrooms so that schools might use the programs. As a result of the series, two new series of classroom telecasts were produced during the 1954-55 school year at the request of the Columbus area schools.

Recommendations

It is not possible to achieve all of the desired educational goals in one experiment. Too much cannot be expected of an eleven week series of classroom telecasts in any given curriculum area. Certainly, not all of the needs of all of the children can be met in eleven weeks, nor in double the amount of time. As the first classroom telecasts to the schools in the Columbus, Ohio, area, however, the two series did achieve results, in the opinion of the writer, in terms of enrichment of the curriculum, and stimulating interest in further experimentation. On the basis of what has been learned from this experience, but at the same time with due allowance for the limitations of the study, the writer makes the following recommendations;

1. There is a need for further experimentation in each subject matter area to find the best type of program format for the presentation of materials to
classrooms by television. More experimentation is needed with the fifteen or twenty minute program format.

2. There is need for continued experimentation to determine the most effective interval of time between classroom programs. The writer believes that the production of a different program each week, with a different theme used in each broadcast, tends to bring new stimuli into the classroom faster than the teacher and pupils can explore them to best advantage.

3. Further experimentation should be undertaken to determine the relative effectiveness of programs using participating children, and those using direct teaching techniques with only a master teacher appearing before the cameras.

4. Further experimentation is needed with matched groups of intermediate grades children to determine the relative effectiveness of teaching with the aid of television and of regular classroom presentation.

5. Further experimentation with matched groups is needed to find out the effects which television has on attitudes and interests of both children and teachers.

6. Further experimentation in classroom telecasting
should be carried on in order to determine at which levels teaching by TV can be used most effectively, and the presentational techniques which are most effective in classroom television.

7. Educators should encourage teachers to experiment with the use of classroom telecasts for their children, using classroom television in order to learn more about its effectiveness.

8. Television workshops should be conducted for teachers so that they might study how to use classroom telecasts effectively. Such workshop groups could also plan and explore new areas for future telecasts.

Concerning the production of classroom telecasts, the writer recommends the following:

1. Where classroom programs are to be produced, a coordinator of classroom telecasts should be provided by the school system in order that:
   a. Production techniques which have been tested and found effective will be used.
   b. The accepted objectives and techniques of education will be followed in all of the classroom telecasts.

2. Careful coaching of the master teacher in the elements of television performance procedure prior to his first appearance is very wise practice. Studio signals, sounds and activities need to be thoroughly explained and shown.
3. The producers must make an effort to keep the master teacher's vocabulary within the understanding of the classroom audience. This applies equally to the guests who appear on the program.

4. Educators should specify to the cooperating television station, the exact facilities and equipment required for the most effective production of their programs. Requirements should be stated in writing, so that misunderstandings are avoided. Definite arrangements concerning the exact time of day required for the series, the number of cameras needed, rehearsal time, scenery, crew, lighting, etc., should be made in written form, and agreed upon by the producer and the station manager or program director well in advance of the series.

5. Further experimentation with the seminar planning method should be carried on in order fully to explore the possibilities of using teachers to assist with the planning of classroom telecasts.

6. The person who directs the classroom television programs---usually an employee of the television station---should be a person sympathetic to, and conversant with the problems of educators. The closest possible cooperation between the director and the producer is necessary.
7. Ample time for rehearsal before the cameras is essential for telecasts in art and science.

It is hoped that with the pattern of successful radio broadcasts to schools set by the Ohio School of the Air, and the successful efforts of the experimental television programs for classroom use, that the use of television in the schools will continue in the Columbus, Ohio, area. It is hoped, likewise, that the use of the medium of television will grow in effectiveness as continuing experimentation develops new methods of application for schools.
APPENDIX "A"

Pre-Series Materials
December 1953.

To ______________________

Dear Sir:

The Ohio School of the Air of the Bureau of Educational Research is planning an experimental study of two series of school telecasts to be produced during the second semester of the current school year. The programs, directed to the intermediate grades in the Columbus area, will be broadcast over a local commercial station. The subject areas involved will be the arts and natural science. The study includes a careful evaluation of the entire project as a basis for future school telecasting.

Obviously we want to build upon previous experience with television programs directed to classrooms. It is my understanding that you have engaged in some activities along this line. Would you help us by supplying two types of information?

1. Do you have printed or mimeographed material describing your programs; teacher, pupil and community reaction; or the process of planning and production? Would you mail me a copy of any such material which is available? If there is any charge for this material, bill the Bureau of Educational Research.

2. Would you take a few minutes to fill out the enclosed inquiry blank? A stamped, addressed envelope is enclosed for your convenience. Two blanks are enclosed so that you may keep a copy of your replies for your records.

We greatly appreciate any help you are able to give us as we develop this experimental project.

Sincerely yours,

Otto F. Schlaak,
Research Assistant.
ACTIVITY IN SCHOOL TELECASTING

I. Current Activity in School Telecasting.
Are you currently telecasting programs directed to classrooms? Yes____. No____.
For each such series state the title, subject area, station, day of week telecast, and time of day in space provided below.
(Space is compressed throughout this sample form. More was allowed).

II. Briefly describe the procedure by which your programs are planned.

III. Briefly describe any appraisal techniques you have used as guidance for program improvement.

IV. What types of teacher guides were provided? Please attach copies if they are available.

V. Briefly outline the extent of school telecasting previous to the current school year. When did such telecasts begin? ____________. Were they single programs or organized series? ____________. What subject fields were represented?


Please Fill in the Following:

Your name________________________. Position________________________.

Institution ______________________. Date__________________.

City__________. Zone______. State_____________________.

Thank You Very Much
APPENDIX "B"

"Art Workshop" Materials
CLASSROOM TELEVISION IS YOURS ON CHANNEL 6

Publicity Folder Used for the Art Series
(Referred to on page 134.)
Art Workshop
beginning February 17, 1954

WTVN

Wednesdays from ten to ten-thirty a.m.

FOR WHOM ARE THE PROGRAMS INTENDED?

Primarily for the fourth, fifth and sixth grades.

HOW WILL THE TEACHER USE THE PROGRAMS?

As the teacher, you will be able to use the series of programs as a supplementary aid to your present teaching. If you wish to use the Art Workshop series, and would like to receive the course manual and outline of the programs, please fill out and mail the enclosed card.

A series of weekly television programs to enrich the teaching of art in the intermediate grades. These first television programs of the Ohio School of the Air will be presented by the School of Fine and Applied Arts of the Ohio State University in cooperation with the school systems of greater Columbus and Station WTVN, Channel Six.

For the first time in Ohio, the Ohio State University through the Ohio School of the Air of the Bureau of Educational Research offers a series of television programs especially designed to bring stimulating experiences in art to children of the intermediate school grades. The programs, which will be thirty minutes in length, will be telescast primarily for classroom use but will be interesting for parents as well. They have been prepared by a television committee consisting of Prof. Manuel Barkan and Prof. Jerome Hausman of the School of Fine and Applied Arts, the staff of the Ohio School of the Air, and a special group of twenty-five elementary school teachers from the greater Columbus area. The programs will be produced by Mr. Otto Schlaak.

CLASSROOM TELEVISION IS YOURS ON CHANNEL 6

Publicity Folder Used for the Art Series
(Referred to on page 134.)
The boys and girls of the sixth grade at the Broadleigh School in Columbus and their teacher, Miss Genivieve Miller, will visit the "Art Workshop" on Wednesday, March 10th.

Her class is now studying the many factors that have brought the people of our world closer together. They have been studying the development of communication and transportation. The inventions, people, and events that have contributed to present day communication and transportation have provided a vast area for reading and class discussion.

As a result of these readings and discussions, many of the children of the class have chosen to dramatize the things that they have been studying by using puppets and marionettes. This will form the theme for this week's telecast. Dr. Hausman will talk with Miss Miller and the children about their ideas in organizing and writing their puppet plays. He'll also discuss problems in the making of hand puppets and marionettes as well as some of the ways by which single puppet stages can be built.

The program will analyze in detail a way in which puppet or marionette heads can be made. Reference will also be made to several methods for putting marionette bodies together.

Thank you for the many comments and suggestions contained in the letters we have received from some of you. It is our hope that you and your class are finding these telecasts helpful.

Have you seen "Science Around Us"? It's the Ohio School of the Air's science program on TV, seen each Monday at 10:00 a.m. on WTVN. We invite you to attend with your class.
(Critical Report Form Used by Seminar Teachers for Individual "Art Workshop" Programs Referred to on page 167.)

Teacher_____________. School_____________. Date_______.

Grade_____________. Number of Children Viewing_____________.

Please place a check in the blanks opposite the words or phrases which most nearly express your opinion of this program. Consider reactions of children.

1. Pupil reaction indicated this program was:
   _____of great interest   _____just interesting   _____poor
   _____quite interesting   _____fair

2. Were the ideas on the program related to your curriculum?
   Yes.   No.
   Please comment. (Use other side of sheet if needed.)

3. Were you able to use the ideas from the program in your class?
   _____Yes.   _____No.

4. The program aroused and held student interest:
   _____from the very beginning   _____at no time in the pro-
   gram   _____later in the program   _____some specific point

5. This program was:
   _____above the maturity level of my class.
   _____below the maturity level of my class.
   _____well suited to the maturity level of my class.

6. The program moved:
   _____too slowly;   _____too fast;   _____about right
   _____unevenly.

7. Did the demonstrations of art work, and visual material show up well? Yes_____. No_____. Comments:

8. Did the program stimulate activity in new art media?
   Yes_____ No_____.

9. What was the reaction of your class to the children on the program?

10. What was their reaction to Dr. Hausman? Did they comment? Tell us.

11. What features do you think should be corrected?

12. We'd appreciate your constructive criticism of any part of the program here.
Name of your school: ______________________   Grade: ______.
Number in the class: __________. Teacher's Name: ______________.

INSTRUCTIONS: Whenever your class is engaged in art activity during the next two weeks, observe the children's activity and reactions as carefully as you can, noting their interests and attitudes toward their art work. Under each question you'll find five degrees of types of behavior or attitudes. After observation, enter under the attitude which describes them the number of children who seem to have that reaction or attitude toward art. Do the same for each category. A sample form is provided for your practice. Fill in the form after two weeks' observation.

(More space was provided on these forms originally)

1. What is the attitude of the children toward art as an activity?

<table>
<thead>
<tr>
<th>Degree of Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISLIKE</td>
</tr>
</tbody>
</table>

Your comments:

2. What is the attitude of the children toward the art work they create?

<table>
<thead>
<tr>
<th>Degree of Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLACE NO</td>
</tr>
</tbody>
</table>

Your comments:

3. What degree of care and concern do the children show for their art equipment, materials, and brushes?

<table>
<thead>
<tr>
<th>Degree of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVELY</td>
</tr>
</tbody>
</table>

Your comments:

4. How much freedom of movement is there in your class group?

<table>
<thead>
<tr>
<th>Degree of Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
</tr>
</tbody>
</table>

Your comments:
5. While working in art activities what degree of independence do the children show?

<table>
<thead>
<tr>
<th>COMPLETELY</th>
<th>SEEK AID</th>
<th>SEEK AID</th>
<th>SOMETIMES</th>
<th>ASK</th>
<th>COMPLETELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPENDENT</td>
<td>FREQUENTLY</td>
<td>OCCASIONALLY</td>
<td>FOR AID</td>
<td>INDEPENDENT</td>
<td></td>
</tr>
</tbody>
</table>

Your comments:

6. On group projects in art, what is the children's sense of responsibility toward others in the group, and to the projects?

| VERY UNCOOPERATIVE | MILDLY UNCOOPERATIVE | INDIFFERENT | QUITE COOPERATIVE | VERY COOPERATIVE |

Your comments:

7. Describe briefly the general atmosphere of the class during art activity.

8. (Question eight is on the following page.)

SAMPLE FORM WHICH WAS ATTACHED TO PAGE ONE OF THIS QUESTIONNAIRE:

Assume that there are 30 children in your classroom.
Question: What is the attitude of the children toward finger painting?

<table>
<thead>
<tr>
<th>DISLIKE</th>
<th>MILDLY</th>
<th>INDIFFERENT</th>
<th>MILDLY</th>
<th>LIKE</th>
<th>VERY MUCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY MUCH</td>
<td>DISLIKE</td>
<td>TOWARD</td>
<td>LIKE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Your comments: "It's hard to say whether all five of the students in the "indifferent" grouping are actually indifferent. They seem uninterested. It is much easier to detect the extremes on this scale."

You are now ready for your first question on the form.
8. This question is a different type from the others. What art media were used by the children in your class in their art activities during the past week? Check them in the space provided in the list below. Add any other media used but not included in the list.

---

PAINTING AND DRAWING
- Crayon
- Tempera
- Oil
- Water Color
- Chalk
- Charcoal
- Paper

PRINTING
- Block Printing
- Potato Printing
- Scrap Printing
- Paper Printing

SCULPTURE
- Clay
- Paper
- Wire
- Carving
- Wood
- Plaster
- Soap
- Wax
- Sawdust and Wheat Paste

CONSTRUCTION
- Scraps
- Leather
- Wood
- Sponges
- Glass
- Seeds
- Fabric
- Feathers
- Yarn
- Cork
- Metal
- Plastics
- Cardboard
- Cellophane
- Reed
- Bricks
- Cloth
- Raffia
- Linoleum

OTHER MEDIA:
(Information Sheet Used by Seminar and Non-seminar Teachers to Furnish Data Concerning their Attitudes and Interests toward Art before and after the Series (Referred to on page 196.)

Name_____________________. School________________. Grade___.

A. TEACHERS OFTEN WONDER HOW MUCH TIME SHOULD BE SPENT ON ART ACTIVITIES, AND HOW THIS TIME SHOULD BE DISTRIBUTED. THE FIRST FOUR QUESTIONS DEAL WITH THIS PROBLEM. (Space has been compressed for this form)

1. About how many hours do you devote to art activities during a typical week in your classroom? _____ Hrs. How is that time distributed during the week?

2. Is there a maximum, and/or minimum amount of time set for art activity in your school? Yes___. No____. If so, what amount?

3. What important restrictions guide your time allowance for art?

4. Any other comments regarding the amount of time spent in art activity.

B. THE PROBLEM OF CLASSROOM MANAGEMENT IS SOLVED BY TEACHERS IN MANY DIFFERENT WAYS. THE KINDS OF MATERIALS USED? THE WAYS IN WHICH MATERIALS ARE DISTRIBUTED, AND THE ACCESSIBILITY OF ART MATERIALS ARE FACTORS WHICH RELATE TO CLASSROOM MANAGEMENT.

5. What kinds of art materials have the children in your class used since September, 1953?

6. When the children in your class work in art activities what access do they have to the place where the art materials are located?

7. To what extent do your children move about the classroom during art activities to get materials, to observe each other's work, to exchange ideas, etc.?

8. Are there instances when activities with more than one art material are carried on at the same time in your classroom? Describe.

9. Are there instances when art activities are carried on while some other subject matter is in process? Describe.

10. Any other comments regarding materials?

C. THE QUESTIONS BELOW DEAL WITH PLANNING ART ACTIVITIES.
11. How do you pre-plan an art activity?
12. How are ideas selected for art activities?
13. What kinds of ideas are used for art activities?
14. Any other comments regarding planning art activities:

D. SOME TEACHERS BELIEVE THAT COPYING IS ALMOST ALWAYS BAD. SOME FEEL THAT LOOKING AT THE WORK OF OTHERS CAN BE USEFUL. THE FOLLOWING QUESTIONS RELATE TO THIS PROBLEM.

15. Are there circumstances under which the copying of another person's art work would be of value? When?
16. Are there circumstances under which copying of another person's way of using art materials would be of value? When?
17. Any other comments regarding copying:

E. TEACHERS DO DIFFERENT THINGS WHILE THE CHILDREN IN THEIR CLASSES ARE WORKING IN ART ACTIVITIES. THE FOLLOWING QUESTIONS DEAL WITH THIS.

18. Name two or three ways in which you help the children in your class with their art activities.

19. How do you help a child to judge his product?

20. What are the bases upon which you judge the art work of the children in your class?

21. Any other comments.

22. Name four or five of your chief reasons for including art in the upper elementary grades.

(This questionnaire was originally placed on six pages.)
(Series Evaluation Form Used for "Art Workshop" Referred to on page 203)

ART WORKSHOP SERIES EVALUATION
May 1954

School________________ City________________ Grade
Viewing programs_______ Number in class_____________. Does school own a
TV set?___________ Screen Size____. More than one set?
Yes____. No_____. How many?________.

1. How many of the art programs did your class see? 1,2,3,4,5, 6,7,8,9,10,11.
2. On the average how many children watched in your room?____
3. Were you able to use the ideas in your class? Yes_____;
No_____; Some degree_______.
4. Were the ideas in the series related to the activities of
your class? Yes_____; No_____; To some degree______
5. The educational value of the "Art Workshop" series was:
Excellent_____; Very good_____; Average_____; Fair_____; Poor_____.
6. The television series as a means of enriching the art
curriculum was: Excellent_____; Very good_____; Average_____; Fair_____; Poor_____.
7. Did you find the art series helpful? Yes______; No_______.
If "yes" check as many of the answers below as you feel
express your true opinion. Leave them blank if they don't
express how you feel.
          a. __It provided a wider command of background information
             in art.
          b. __It stimulated my pupils to art expression.
          c. __It helped the pupils develop a sense of critical
             mindedness toward art.
          d. __It brought resources in art to my class which I
             couldn't have provided.
          e. __It helped me to evaluate the work of the children
             more meaningfully.
          f. __It furnished useful supplementary information to the
             class.
          g. __Others. (Use rear side of sheet if needed)
     If "no" please give us your frank appraisal. (Use other
     side of sheet)
8. As a result of this series are your children, generally
showing: (Check one for each question)
          a. Increased sensitivity toward art?
              Yes____; No____; To some degree____.
          b. Increased interest in art as a means of expression?
              Yes____; No____; To some degree____.
          c. Increased appreciation for their art products?
              Yes____; No____; To some degree____.
d. Increased ability to use a variety of art media to express themselves?
Yes___; No____; To some degree____.

e. Increased appreciation for art forms?
Yes___; No____; To some degree____.

f. Increased imagination and creativity in their art work?
Yes___; No____; To some degree____.

g. Increased ability to see visual relationships in art?
Yes___; No____; To some degree____.

h. Increased ability to see the relationship of art to daily living?
Yes___; No____; To some degree____.

9. On the basis of student reaction did the children appearing on "Art Workshop" add to the general effectiveness of the series?
Yes___; No____; To some degree____.

___They provided a means of participation for the children in class.
___They seemed to identify themselves with those on TV.
___The TV children imparted confidence to the pupils that they could do the art work too.
___They added variety, and a sense of "real classroom" to the programs.
___Others. Please add, using the other side of this sheet.

CHECK AS MANY BLANKS BELOW AS MOST NEARLY DESCRIBE YOUR OPINION OF THE SERIES. LEAVE THEM BLANK IF THEY DON'T APPLY TO YOU.

10. Concerning the TV "Art Workshop" series as a whole. I think that it:
___fulfilled the objectives stated in the teachers' manual.
___helped in the art instruction.
___was below the maturity level of my class.
___was above the maturity level of my class.
___contributed very little that the teacher couldn't cover.
___was of passing value to my pupils.
___was of permanent value to my pupils as:
___specific education.
___background enrichment.
___improvement in attitudes toward art.
___a stimulant to individual research and exploration in art.

11. What program did the children like best? 1,2,3,4,5,6,7,8, 9,10,11. (Circle)
Why? (USE OTHER SIDE)
12. What program did they like least?
   1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11. (Circle one)

13. Would you like another art series next year?
    Yes____. No____.
    What area of art would you like to see emphasized?

14. In what way would you change the form of the programs?

15. Do you feel that the children enjoyed the "Art Workshop" programs? Yes____. No____.
(Form Used in Linden School Study to Obtain Children's Reactions to the Science and Art Programs Referred to on page 217.)

Name____________________. Date_____. Grade___________.
Girl____. Boy_____. Age_______.

Please place a check in the blanks opposite the words which tell how you liked this program.

1. I thought this program was
   ____ very interesting
   ____ interesting
   ____ good
   ____ fair
   ____ poor

2. I liked this program
   ____ right from the beginning
   ____ later in the program
   ____ at no time at all
   ____ at some other point. Where?

3. I thought the program moved
   ____ too slowly
   ____ too rapidly
   ____ just right
   ____ rather unevenly

4. I thought the demonstrations and materials showed up
   ____ very clearly
   ____ very good
   ____ good
   ____ fair
   ____ poor

5. What did you like most about the program?
(Form Used in the Linden School Study to Find Out Children's Reactions to their Own Art Work Referred to on page 218.)

Name_____________________________.  Date_________________.

Grade______.  Boy_____.  Girl______.  Age_______.

What do you do with your art work?

_____________________________________________________________________

always often sometimes hardly never

_____________________________________________________________________

Do you take it home?

Do you display it at home?

Do you like to have it displayed at school?

Do you show it to others?

Do you keep your art work?

Do you ask others in the class what they think of your art?
(Form Used in the Linden School Study to Find Out Children's Reactions to the Art and Science Series Taken as a Whole Referred to on page 218.)

Name________________________. Date____________.

Grade______. Boy______. Girl______. Age______.

1. Did the ______ program interest you in wanting to (art—science) try some of the ideas from the program either at home or at school?
   Yes____ No____ Comments:

2. Did the ______ program interest you enough that you (art—science) wanted to read more about the subject on your own?
   Yes____ No____ Comments:

3. What program would you like to see next year? Check one.

   — Art____ Science____ Social Studies____ Geography____
   — Science____ Arithmetic____ History____ Current Events____
   — Other____

4. Here are the subjects discussed on the programs you've just seen.

   ART
   " Program 1. Shadow Plays
   " 2. Mobiles
   " 3. Murals
   " 4-5. Puppets & Marionettes
   " 5-6. Picture Organization
   " 6. Charcoal Drawing
   " 7-8. Printing Processes
   " 8-9. Sculpture
   " 10-11. Mexico Art

   SCIENCE
   " Program 1. Sound in TV
   " 2. Light in TV
   " 3. Electricity
   " 4. Review of TV
   " 5. Air and Its Properties
   " 6. Weather
   " 7. Weather Forecasting
   " 8. Animals
   " 9. Plants
   " 10-11. Astronomy

5. Which program did you like best?________________________
   Can you tell why?

6. Which program did you like least?________________________
   Can you tell why?
APPENDIX "C"

"Science Around Us" Materials
Publicity Folder Used for the Science Series
(Referred to on page 238.)
Science Around Us
beginning March 1, 1954

WTVN
mondays from ten to ten-thirty a.m.

A series of weekly television programs to enrich the teaching of science in the intermediate grades. These TV programs of the Ohio School of the Air will be presented by the College of Education of the Ohio State University in cooperation with the school systems of Columbus and Station WTVN, Channel Six.

Primarily for the fourth, fifth and sixth grades.

Teachers will use "Science Around Us" as a supplementary aid to their teaching. If you wish to use the series, and would like the free manual and outline of the programs, please fill out and mail the enclosed card.

Publicity Folder Used for the Science Series
(Referred to on page 238.)
This is the third program in the unit on AIR AND WEATHER. On this week's program we'll build a simple weather station.

OBJECTIVES:
1. To show some ways to record the weather.
2. To develop understanding and appreciation of weather work.
3. To become aware of the effect of weather on our activities.

SOME QUESTIONS WE'LL RAISE ON THE PROGRAM:
1. What instruments are needed to make a simple weather forecast?
2. How can we make these instruments in the classroom?
3. How do we use our readings to make a forecast of the weather?
4. How can we use the weather map in the newspapers?

BEFORE THE PROGRAM YOU MAY WANT TO DO SOME OF THESE THINGS:
1. Make some weather observations. How does the sky look? How does air feel? Make a prediction for tomorrow.
2. Bring in a weather map from your local newspaper.

FOLLOWING THE PROGRAM WE SUGGEST THAT YOU:
1. Make the simple instruments seen on the program.
2. Keep a chart and make your own weather forecasts.
3. Discuss how weather affects people's activities.

SOURCE MATERIALS YOU MAY WISH TO USE:
1. Weathercraft...Athelstan F. Spilhaus
2. Everyday Weather and How it Works...Herman Schneider
3. All About Weather...Ivan Tannehill.
4. Lightning and Thunder...Herbert Zimm.

NOTE:
We will have a special guest on today's program. Other guests: Mr. L. E. Law---principal and teacher at N. Perry School, and some pupils, who will show how they built their own weather station.
Teacher_____________. School_____________. Date_______.

Grade_______. Number of Children in Class_____________.

Please check the blanks opposite the words which most nearly express your opinion of this program. Consider the reactions of your class.

1. Pupil reaction indicated this program was:
   ___of great interest ___just interesting ___poor
   ___quite interesting ___only fair

2. The program aroused and held student interest:
   ___from the very beginning ___at no time in the program
   ___later in the program ___at some specific point

3. This program was:
   ___above the maturity level of my class
   ___below the maturity level of my class
   ___quite well suited to the maturity level of my class
   ___very well suited to the maturity level of my class

4. The program moved: ___too slowly; ___too rapidly;
   ___about right; ___unevenly

5. The educational value of the content was:
   ___Excellent; ___good; ___fair; ___poor.
   The quality of the TV production was:
   ___Excellent; ___good; ___fair; ___poor.
   The degree of interest and appeal:
   ___Excellent; ___good; ___fair; ___poor.

6. Were the ideas used related to your science curriculum?
   ___Yes; ___No; ___Unsure.

7. Were you able to use the ideas in your class?
   ___Yes; ___No; ___Unsure.

8. Did the program stimulate exploration into new scientific areas?
   ___Yes; ___No; ___Unsure.

9. The ideas or facts presented were:
   Too many____; Too few___; about right____.

10. What was the reaction of your class to Mr. Lemmon? Did
    they comment? Please elaborate:

11. Were there any features you'd like to see corrected?
    What were they?

12. We would appreciate any further criticism of the program
    at this point.
(Information Sheet Used by Seminar and Non-seminar Teachers Two Weeks before and after the Series to Evaluate Children's Attitudes and Interests towards Science Referred to on page 280.)

Your school ______________. The grade you teach ___________.

Number in class: ______________. Your name _________________.

Instructions: Please observe your class during science activity over a two week period. Watch their reactions and attitudes as carefully as possible. Under each question are five degrees or types of reaction or attitudes. Enter under the attitude which describes them the number of children in your class who seem to have that reaction towards science. Do the same for each question. A sample form is attached for practice purposes.

1. What is the attitude of the children towards science as an activity?

<table>
<thead>
<tr>
<th>DISLIKE IT</th>
<th>MILD DISLIKE</th>
<th>INDIFFERENT</th>
<th>MILD LIKING</th>
<th>LIKE IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY MUCH</td>
<td>FOR IT</td>
<td>ENT</td>
<td>FOR IT</td>
<td>VERY MUCH</td>
</tr>
</tbody>
</table>

Your comments: _____________________________

2. What degree of interest do the children show regarding scientific aspects of daily phenomena? (Cars, light switches, TV sets, etc.).

<table>
<thead>
<tr>
<th>EXTREMELY DISINTERESTED</th>
<th>QUITE DISINTERESTED</th>
<th>INDIFFERENT</th>
<th>QUITE INTERESTED</th>
<th>EXTREMELY INTERESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTED</td>
<td>ESTED</td>
<td>ENT</td>
<td>INTERESTED</td>
<td>ESTED</td>
</tr>
</tbody>
</table>

Your comments: _____________________________

3. What degree of interest do they show in their natural environment? (Things as rocks, trees, plants, weather, animals, etc.).

<table>
<thead>
<tr>
<th>EXTREMELY DISINTERESTED</th>
<th>QUITE DISINTERESTED</th>
<th>INDIFFERENT</th>
<th>QUITE INTERESTED</th>
<th>EXTREMELY INTERESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTED</td>
<td>ESTED</td>
<td>ENT</td>
<td>INTERESTED</td>
<td>ESTED</td>
</tr>
</tbody>
</table>

Your comments: _____________________________

4. How well informed are the children in regard to basic information concerning scientific phenomena? (How much do they know about scientific principles, and can they apply what they know?)

<table>
<thead>
<tr>
<th>VERY POORLY INFORMED</th>
<th>QUITE POORLY INFORMED</th>
<th>INDIFFERENT</th>
<th>QUITE WELL INFORMED</th>
<th>VERY WELL INFORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFORMED</td>
<td>INFORMED</td>
<td>ENT</td>
<td>INFORMED</td>
<td>INFORMED</td>
</tr>
</tbody>
</table>

Your comments: _____________________________

(Space was provided here)
5. To what degree do your students suspend judgment on a problem or question until sufficient evidence has been presented?

<table>
<thead>
<tr>
<th>Often Make</th>
<th>Occasionally</th>
<th>Rarely</th>
<th>Quite Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap Judgments</td>
<td>Snap Judgments</td>
<td>Snap Judgments</td>
<td>Snap Judgments</td>
<td>Snap Judgments</td>
</tr>
</tbody>
</table>

Your comments: (Space was provided)

6. On group projects, how well do they work together?

<table>
<thead>
<tr>
<th>Very Well</th>
<th>Quite Well</th>
<th>Indifferent</th>
<th>Quite Uncooperative</th>
<th>Very Uncooperative</th>
</tr>
</thead>
</table>

7. (Question 7 is on the next page)

SAMPLE FORM SENT FOR PRACTICE BY TEACHER.

ASSUME THAT THERE ARE TWENTY CHILDREN IN YOUR CLASSROOM

Question: What is the attitude of your children towards electricity?

<table>
<thead>
<tr>
<th>Dislike Very Much</th>
<th>Mildly Dislike</th>
<th>Indifferent</th>
<th>Mild</th>
<th>Liking</th>
<th>Like Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Your comments: "The two who dislike it very much seem hard to please in all phases of science. It is hard to say whether all five of the pupils in the indifferent group are actually indifferent. They do seem to lack interest."

(This is the way it is done. It tells us two children like it very much, six have a mild dislike for it, five are indifferent, one likes it mildly, and six like electricity very much.)

YOU'RE NOW READY TO WORK ON THE FIRST QUESTION ON THE MAIN SHEET.
7. How important is science to the children in terms of liking. How well do they like it? (In order to find out how they really felt, they were also asked to tell how well they liked other subjects.) Put the following list on your blackboard and have the children copy it, telling how well the subjects are liked.

<table>
<thead>
<tr>
<th>Class Activity</th>
<th>Like Very Much</th>
<th>Like Fairly Well</th>
<th>Don't Like It</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arithmetic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please use the above form as a tabulation sheet. When you have tabulated the results of the "vote" put figure totals under the appropriate heading for each activity. Thank you very much.
(Information Sheet Used by Seminar and Non-seminar Teachers to Furnish Data Concerning their Own Attitudes and Interests towards Science before and after the Science Series. Referred to on page 301.)

Name________________ . School________________ . Grade______.

A. TEACHERS OFTEN WONDER WHAT THE NATURE OF SCIENCE EXPERIENCES SHOULDBE, AND HOW MUCH TIME SHOULD BE SPENT IN CONNECTION WITH SUCH ACTIVITIES. THE FOLLOWING QUESTIONS DEAL WITH THIS.

1. About how many hours do you devote to science activities during a typical week in your classroom? ______ Hours.

   a. How is this time distributed throughout the week?

   b. Is there a class period which is thought of as a science period? Yes_____. No_____.

2. Would you list five or six science topics or problems which have been included in your classes during the past month?
   1.
   2.
   3.
   4.
   5.
   6.

   a. What are the sources for these topics or problems in science?

B. INTERMEDIATE TEACHERS OFTEN ARE CONCERNED WITH WHAT THE OBJECTIVES SHOULD BE FOR SCIENCE IN THE 4th, 5th, AND 6th GRADES, AND WAYS IN WHICH THEY CAN GIVE THESE OBJECTIVES MEANING THROUGH EXPERIENCES. THE FOLLOWING QUESTIONS DEAL WITH THIS:

1. Do you feel that the present science program is adequate in your school? Yes____. No_____. Unsure_____.

   a. If you had freedom to plan your own science program in your school what do you think would be some of the high points in it?

   b. Name some specific ways in which learning experiences may be provided to the children in science.
(Second Page Teachers Evaluation Form)

c. Are there some attitudes which you give effort
to developing in the child regarding science?
Yes_____.  No______.

d. What is the nature of these attitudes?

C. QUITE A BIT HAS BEEN WRITTEN AND SAID REGARDING MATERIALS
USED FOR ACTIVITIES AND DEMONSTRATIONS IN ELEMENTARY
SCIENCE. WHAT DO YOU DO, AND THINK ABOUT IT?

1. What equipment do you feel is needed to achieve
the objectives of a science program in the inter-
mediate grades?

D. THE FOLLOWING QUESTIONS DEAL WITH PLANNING SCIENCE
ACTIVITIES:

1. How do you plan a science activity?

2. When should planning of day to day activities in
science be done?

E. FINAL QUESTION.

1. Name four or five of your chief reasons for
including science in the upper elementary grades.
(Series Evaluation Form Used for Science Around Us
Referred to on page 309.)

School________________________ City________________________ Grade

Viewing Programs_____________________ Number in Class______

Does your school own a TV set?_____ More than one set?____

How many?_____. Size Screen on sets_________.

1. How many of the programs did you watch? 1,2,3,4,5,6,7,8,9, 10,11.

2. On the average, how many children watched the programs in your room? ______.

3. Were you able to use the ideas in the series? Yes_____.
   No_____. To a degree_____.

4. Were the ideas related to the activities of your class? Yes_____. No_____.
   To some degree_____.

   If not, were you able to relate them?
   Yes_____. No_____. To some degree_____.

5. The educational value of the science series was:
   Excellent_____; Very good_____; Average_____; Fair_____; Poor_____.

6. As a means of enriching the science curriculum the series was:
   Excellent_____; Very good_____; Average_____; Fair_____; Poor_____.

7. Did you find the science series helpful? Yes_____. No_____.
   If "yes" check as many answers below as you feel express your opinion.
   Leave them blank if they do not express how you feel.
   a.____It provided a wider command of background information in science.
   b.____It stimulated the pupils to further experimentation in science.
   c.____It stimulated the pupils to do more reading in science.
   d.____It brought resources in science to my class which I couldn't bring.
(Second Sheet Science Series Evaluation Form)

e. ___ It showed the children how to solve problems scientifically.

f. ___ It furnished useful supplementary information for the class.

g. ___ Others.

If "no" please give your frank appraisal. (Use reverse side of sheet).

8. As a result of this series are your children, generally, showing:
   (Check one answer for each of the following)
   a. Increased interest in science as an activity?
      Yes____; No____; Some degree____.
   b. Increased interest in their environment?
      Yes____; No____; Some degree____.
   c. Increased interest in scientific aspects of daily phenomena? (Cars, TV, Radio, etc.)
      Yes____; No____; Some degree____.
   d. Increased ability to use scientific reasoning to solve problems and answer questions?
      Yes____; No____; Some degree____.
   e. Increased tendency to test and weigh evidence?
      Yes____; No____; Some degree____.
   f. Increased recognition of importance of science?
      Yes____; No____; Some degree____.
   g. Increased ability to see the relationship of science to daily living?
      Yes____; No____; Some degree____.

9. On the basis of student reaction did the children on "Science Around Us" add to the general effectiveness of the series? Yes____; No____; Some degree____.
   If "yes" how were they helpful?
   (CHECK AS MANY BELOW AS APPLY)
   ___ They provided a means of participation for the children.
   ___ They seemed to identify themselves with those on television.
   ___ The TV children gave confidence to pupils to try experiments too.
They added variety, and a sense of real classroom to the programs.

Others. (Add more if you wish, using other side of this sheet.)

10. As a whole, I think the science series:
(CHECK THOSE WHICH APPLY TO YOU)

___ fulfilled the objectives stated in the teachers' manual.
___ helped the science instruction.
___ contributed very little that the teacher couldn't cover.
___ was below the maturity level of my class.
___ was above the maturity level of my class.
___ was of passing value to my pupils.
___ was of permanent value to my pupils as:
   ___ specific education.
   ___ background enrichment.
   ___ improvement of attitudes towards science.
   ___ stimulant to more individual research.

11. What program did the children like best? (Circle one) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

12. What program did they like least? (Circle one) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

13. Would you like another TV science series next fall? Yes; ___ No.

   What area of science would you like emphasized?

14. In what way would you change the form of the program?

15. Do you feel that the children enjoyed the science programs? ____ Yes; ____ No.
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AUTOBIOGRAPHY

I, Ottmer Franklin Schlaak, was born in Oshkosh, Wisconsin, March 8, 1919. I received my secondary school education in the public schools of Oshkosh, Wisconsin. My first three years of undergraduate training were obtained at the LaCrosse State Teachers College in La Crosse, Wisconsin. Four and one half years of service in the United States Army Air Forces as an officer with the Eighth Air Force interrupted my college work. Following the war, I resumed my undergraduate work at the State University of Iowa, from which I received the degree Bachelor of Arts in 1947. One year later, I received the degree Master of Arts from the same university. I was employed as an instructor of radio and speech in the speech department of Oregon State College from 1948 to 1950. In June of 1950 I enrolled at the Ohio State University to complete the requirements for the degree Doctor of Philosophy. While at Ohio State University I was employed as a program assistant at Station WOSU, and later as a Research Assistant in the Bureau of Educational Research for the Ohio School of the Air. I am currently employed as the Television Program Coordinator for the TV Center of the Milwaukee Vocational School, where I have responsibility as Department Chairman and Faculty Counselor for Television Training.