

**THE USE OF RADIO IN EDUCATIONAL
INSTITUTIONS**

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INSTITUTIONS

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CHAPTER I

PURPOSE, NATURE, AND METHOD OF THE INVESTIGATION

A new era has dawned in education. The radio--a modern miracle--in less than a decade has taken its place as a major method for quickly imparting knowledge to millions. This new medium is at the immediate service of educators to bring the finest thought, the greatest minds to every school.¹

Such is the opening statement in a little booklet published by one of the large radio manufacturing companies. It is advertising to be sure, but investigation reveals that it also contains truth. A little research convinced the author that what is happening in the field of education by radio is of enough significance to merit the close attention of every individual who is interested in education. A preliminary investigation assured him that a detailed study of the situation could not but result in benefit. Therefore an investigation of the use of radio in educational institutions was undertaken.

Purpose of the investigation.-- The writer's efforts soon revealed that little information of a valuable nature is readily available to the person who wishes to follow the development of radio education. Few investigations have been made. The most important investigations have not been made available to the general public. Much of a general nature has appeared in periodical literature, but the necessity of searching through scores of magazines in order to gain a smattering knowledge of the field discourages all but the most interested.

¹ Music in the Air, Camden, N. J.: R C A Victor Company, Inc., pp. 2.

Furthermore, many of the magazine articles have appeared in periodicals that cannot generally be obtained even through public libraries.

A little further investigation also convinced the writer that to make an important contribution through the discovery of new knowledge was also difficult for one whose resources are limited.

These considerations led to the conclusion that one's efforts could best be spent in making a service-type of study which would place a general survey of the field at the disposal of the interested reader. Yet the field is so broad that to make a complete survey was out of the question. The territory to be covered would have to be limited. It happened that the particular section of the field that interested the writer most seemed to have been the least thoroughly covered. Thus the value of a survey study, stressing this aspect of the situation, became more apparent.

In spite of the fact that this investigation then emphasizes a particular line of development, the effort has been made to include enough from the other phases to furnish an adequate foundation for the person who wishes to become familiar with the general field. It is hoped that this study may be useful also to other persons who wish to do definite research in the field. For the benefit of these persons a detailed outline of ninety-eight research problems and a lengthy bibliography covering every phase of the field have

been included in this work.

Nature and scope of the study.- Since this is a survey study, an intensive covering of the field has been impossible. No attempt has been made to present a detailed analysis of the situation. Rather the study is extensive. It deals with trends and high points. For this reason it is not to be expected that the material presented in any part of the work is complete and final. The writer has made an earnest effort to discover the really pertinent facts.

The particular section of the field with which the study deals is indicated by the title. Other aspects of the situation include the use of the radio in adult education, and the use of the radio in education from the standpoint of the broadcaster. The aspect concerned with in this work, however, cannot be sharply separated from the other aspects. They have developed together. They have been discussed together. In general they have been investigated together. Many of the problems in the field are common to all. The reader will find some material relating to all of these aspects.

It must be kept in mind, however, that this study is concerned primarily with the use of the radio within the classroom in elementary and secondary schools. The broadcasting that has been done for students in the institutions of higher education has been timed for out-of-school hours. It will be noted also that not all of the use of radio equipment in school buildings is confined to the receiving of broadcasts. The most modern and efficient equipment, the centralized-radio system,

is adapted to a great many uses independent of the activities of broadcasting stations. These uses have been considered. The emphasis in the personal investigating done by the writer has been on this type of equipment.

Method of the investigation.- The investigation has been carried on largely by correspondence. After determining briefly what phases of the subject should be studied, a letter stating the interests of the writer and asking for suggestions was sent to a large number of the radio manufacturing companies. A similar letter was sent to a number of the recognized authorities in the field. The replies to these letters contained many helpful suggestions. Whenever a new source of information was mentioned, an inquiry was sent to that source.

After the preliminary letter had been sent out, inquiries of a more specific nature were mailed to various persons and organizations. This type of correspondence was continued throughout the investigation.

The author then attempted to secure a list of all the companies in the United States that manufacture centralized-radio systems. A list was compiled, but it is not certain that it is complete. Each of these companies was then requested to send the author a list of all the schools that it had equipped with centralized systems during the last three years. Many of the companies replied with incomplete lists. A few sent complete lists. In this way a list of about one hundred and fifty schools that are equipped with such

apparatus was compiled.

The next step consisted in sending a questionnaire to the principal of each of these schools. A copy of this questionnaire is presented in Appendix A. About half of the principals replied. In some cases the equipment was not yet in use. The replies that were of value numbered sixty.

In the course of the investigation a list of broadcast programs of an educational nature was gathered. A letter was then addressed to the sponsors of each of these programs asking for up-to-date information as to their character, and for certain facts concerning the extent of their use by schools. At the same time a final letter was sent to the authorities in the field who had not already been heard from. This last letter asked for the personal reaction of the recipient toward the general situation and to the prospects for the future, and also for information on some specific points. This was the final attempt to obtain information by correspondence.

Not including the questionnaires numbering one hundred and fifty, no fewer than two hundred letters were mailed. Through his correspondence he has come into contact with the best authorities in the field. He has also been put in touch with the best sources of information. Reports of the most valuable studies that have been made were sent him. The greatest difficulty has been to get in touch with strictly up-to-date information. Most of the reported studies are a year or more old.

Finally, the writer has analyzed a great deal of printed

material of various kinds. The most valuable of the few books that deal with the subject were secured. A great deal of periodical literature was examined. The information from these various sources was then carefully classified, and worked into a volume which it is hoped will be of real value to those who read it.

Secondary Education in partial fulfillment of the requirements for the degree of Master of Education at Harvard University. In support of the investigation is given in Radio in Education, published by the Payne Fund. The following paragraphs are excerpted from this report:

The aims of this study were:

- (1) The determination of the present status of the radio in regard to its use in secondary education.
- (2) The critical evaluation of:
 - (a) The radio medium as an object to be studied, selected and operated.
 - (b) The radio medium as a source of education.
- (3) The possible lines of progress in the future use of the radio as a medium and as a social psychology instrument.

A questionnaire sent to each of the principals of the 244 Massachusetts high schools brought replies from 177 schools. The replies were analyzed and the following conclusions were reached: The radio is used in some schools for the purpose of the broadcast stations, but very few schools are equipped with a radio. The radio is used in the school for the purpose of the broadcast stations, but very few schools are equipped with a radio. The radio is used in the school for the purpose of the broadcast stations, but very few schools are equipped with a radio.

Radio in Education - The Payne Fund, 1934, pp. 4-5.

Radio in Education, New York: The Payne Fund, 1934, pp. 4-5.

CHAPTER II

RELATED INVESTIGATIONS

Stewart Bryon Atkinson.- The earliest investigation that the writer was able to find was made in 1927 by Stewart Bryon Atkinson, principal of the Upton, Massachusetts, High School. Mr. Atkinson prepared a thesis on "Radio in Secondary Education" in partial fulfillment of the requirements for the degree of Master of Education at Harvard University. An account of the investigation is given in Radio in Education, published by the Payne Fund. The following paragraphs are excerpts from this report:

The aims of this thesis were:

- (1) The determination of the present status of the radio in regard to its use in secondary education.
- (2) The critical evaluation of,
 - (a) The radio machine as an object to be studied, constructed and operated.
 - (b) The radio program as a source of education.
- (3) The possible lines of progress in the future use of the radio as a machine and as a sound producing instrument.

A questionnaire sent to each of the principals of the 253 Massachusetts high schools brought replies from 57 schools that had receivers and 123 that had none....

In 28 schools use was made of some portions of the daytime programs of the broadcasting stations, but very few times per year....

Mr. Atkinson's conclusions were unfavorable to the use of radio to conduct school courses, and differed widely from conclusions reached by the Preliminary Committee on Educational Broadcasting as a result of its national survey in the same year.¹

Preliminary Committee on Educational Broadcasting.- The Payne Fund early became interested in the subject of edu-

¹Armstrong Perry, Radio in Education, New York: The Payne Fund, 1929, pp. 54-55.

ational broadcasting. In December, 1927, the Fund found itself in a position to provide for a national survey of the schools of the country. The interest of members of the National Education Association in this survey led to the organization of the Preliminary Committee on Educational Broadcasting. The Committee made a national survey to determine to what extent there was a desire for school broadcasting, and to what degree the schools were equipped for reception. Questionnaires were sent to three thousand county superintendents, principals and classroom teachers of public schools. Reports from 475 persons representing 12,095 schools and 42,043 teachers were received. Four hundred and forty-one of the reports said they would like to have a school of the air. The number of schools that would equip with radio receivers in case the broadcast programs were made available was 5,714 or 44% of the total reported.

The investigation of the Preliminary Committee led to the founding of the Ohio School of the Air as a practical demonstration of the value of school radio programs.

The Payne Fund.- The Payne Fund has been one of the most active organizations in the encouragement of educational radio. A great many of the major enterprises have been either financed or assisted by the Payne Fund. Mr. Armstrong Perry made an investigation through the Fund which took him into every state of the Union. In May, 1929, the Fund also mailed a letter to officials of all national, sectional and state organizations in the United States that were known or believed

to be interested in education by radio. They were asked to tell what had been done by the organization or by any member of it to make education available by means of radio to pupils in schools, colleges, or universities. The results of this investigation together with an account of the Ohio School of the Air, a history of radio in education, and many other items have been published in a volume by Armstrong Perry entitled Radio in Education.

American Association for Adult Education.- A valuable study in adult broadcasting was made recently by Dr. Levering Tyson for the American Association for Adult Education. The report of this study has been published in an interesting booklet entitled Education Tunes In. The nature of the investigation is best explained by Dr. Tyson himself in the following quotation from this volume:

The Association, aware of the unsettled conditions in the broadcasting field, was reluctant to investigate the possible uses of radio in education until a considerable group within the industry had indicated a willingness to cooperate and an interest in the further development of educational programs. Such interest having been manifested, the association, on funds provided by the Carnegie Corporation of New York, authorized a six-months' study. Columbia University lent a member of its staff to act as director of the study, and the work began in September, 1929. No monumental or exhaustive survey was contemplated. An attempt has been made to look at as much of the field of radio broadcasting as possible in the short period of time available; to visualize tendencies rather than to assemble facts which, under conditions of rapid change, might be challenged almost as soon as put forth.²

National Advisory Committee on Education by Radio.- On

²Levering Tyson, Education Tunes In, New York: American Association for Adult Education, pp. 9.

June 6, 1929, Dr. Ray Lyman Wilbur, Secretary of the Interior, appointed an Advisory Committee on Education by Radio. The Committee was headed by Dr. William John Cooper, United States Commissioner of Education, as chairman. The purpose of the Committee was expressed by Dr. Wilbur as follows:

The possibilities of radio as an educational tool appear to educators, broadcasters, manufacturers, and the public at large. This general interest led to a conference in my office at Washington on May 24. Those present by unanimous vote requested that I should appoint a committee to make a thorough fact-finding study of the situation.³

The work of this Committee is no doubt the greatest contribution in the way of research that has been made in the field. Four subcommittees were created to carry out the different tasks of the Committee as a whole. Two of these subcommittees, the committee of Fact Finding and the committee of Research, should be mentioned. The former subcommittee was charged with the responsibility of canvassing the field very carefully with a view of discovering every experiment in broadcasting of an educational nature. The latter was asked to develop techniques for evaluating the effectiveness of educational programs on the radio.

The Committee had working arrangements with both the Payne Fund and the American Association for Adult Education, so that there was no duplication of effort. The Committee

³Report of the Advisory Committee on Education by Radio. Appointed by the Secretary of the Interior, Washington, D.C.: Advisory Committee on Education by Radio, United States Department of the Interior, 1930, pp. 7.

was assisted in its work by Mr. Armstrong Perry, who was loaned to the Committee by the Payne Fund. Mr. Perry made the study, previously mentioned, covering the entire United States under the direction of the Committee. The report of the Committee has been published in a volume which may be obtained from the Office of Education.

The report of the chairman to the Secretary of the Interior recommended:

That there be established in the Office of Education, Department of the Interior, a section devoted to education by radio, and charged with such responsibilities as the following: (a) to receive from the Advisory Committee on Education by Radio its files and collected documents, to keep this material up to date and available for reference by the many students of the subject; (b) to organize some of the material into bulletins to be issued as demand warrants; (c) to outline techniques for research and carry on investigations into the best methods of broadcasting and compare the results of lessons sent to schools by radio with the results obtained by other means; (d) to keep the educational interests of the country fully posted on and alive to the importance of this new instrument as an educational tool; (e) to attempt to prevent conflicts and duplication of effort between various broadcasting interests; (f) to furnish advice on the educational soundness of programs suggested and to supply typical programs upon the request of any station whether educational or commercial.⁴

Such a department in the Office of Education has since been created. Mr. Armstrong Perry is now serving the Office of Education as Specialist in Radio Education.

C. H. Mercer, Dalhousie University.- An international investigation of radio in education has been carried out by Professor C. H. Mercer of Dalhousie University, Halifax, Nova

⁴Ibid., pp. 75-6.

Scotia. Professor Mercer has visited both Europe and the United States in his study. He has said that the Ohio School of the Air is the equal of any effort of the kind in the world.

Teachers College, Columbia University.- The Department of Rural Education of Teachers College became interested in 1929 in the use of radio in the schools. An investigation of the use of programs by the schools was started with Miss Margaret Harrison in immediate charge. The study has been carried on through a group of rural schools in New York, New Jersey, and Connecticut. Programs of an educational nature are selected from those announced by broadcasting stations. Lists of the programs are sent to the cooperating schools, where the teachers select the programs they wish to use. The effect of the programs on the pupils is studied and reported. A summary of the activities of 1929-30 has been published in mimeographed form.

University of Wisconsin.- Some interesting experimenting has been carried on recently by the University of Wisconsin. A sum of money was provided by the Payne Fund in 1929 to finance an investigation. A group of twenty-five experimental schools was chosen by the county superintendents. It was attempted to make this group a cross section of the schools of the state. Then a second group of twenty-five schools as nearly like the first group as possible was chosen. The second group was to act as a control group. The experiment attempted to measure the effectiveness of the radio in teaching current events and music to students in the sixth, seventh,

and eighth grades. Students in both experimental and control groups were provided with the same study materials. The students in the experimental group received their instruction by radio. Those in the control group received their instruction from the regular teachers. During and at the close of the experiment the same examinations were given to each group. The papers were marked and the scores were compared to determine which group had the advantage. In both the case of music and current events, the radio held a slight advantage.

E. D. Jarvis.- Mr. E. D. Jarvis, Superintendent of Schools at Fort Recovery, Ohio, wrote during 1930 a thesis on the subject of education by radio. Condensed summaries of chapters of this thesis appeared recently as a series of articles in The American School Board Journal.

Earl Y. Poore.- Mr. Earl Y. Poore, Director of Educational Research of the Baritone Manufacturing Company, manufacturers of centralized radio and selective public address systems, informed the writer that he is making an investigation similar to that made by this study as the basis for a thesis to be written for Northwestern University.

National Committee on Education by Radio.- The existence of the National Committee on Education by Radio is an indirect result of the work of the Advisory Committee on Education by Radio.

The report of the Committee led the United States Commissioner of Education to call a conference on education by radio in Chicago on October 13. Representative educators and commercial broadcasters and a representative of the

Federal Radio Commission there discussed the possibility of placing educational broadcasting stations in a class by themselves, with their radio channels reserved by law.⁵

This conference on October 13, 1930 led to the formation of the National Committee on Education by Radio. The purpose of the Committee is best explained by the following statement taken from the weekly Bulletin published by the Committee:

The purpose of the Committee is to secure to the people of the United States the use of radio for educational purposes by protecting the rights of educational broadcasting, by promoting and coordinating experiments in the use of radio in school and adult education, by maintaining a Service Bureau to assist educational stations in securing licenses and in other technical procedures, by exchange of information through a weekly bulletin, by encouragement of research in education by radio, and by serving as a clearinghouse for research.⁶

The activities of the Committee are financed by a five-year grant of two hundred thousand dollars from the Payne Fund. The members serve without pay. Dr. Joy Elmer Morgan is chairman of the Committee.

National Advisory Council on Radio in Education.- The National Advisory Council on Radio in Education was organized in 1930. A small group of educators met in New York City during the winter of 1929-30 to discuss broadcasting and to determine whether radio could be used more generally as an instrumentality in education. The organization of the Council resulted. Funds for a period of three years have been supplied by John D. Rockefeller, Jr., and by the Carnegie Corporation of

⁵"Education by Radio," School and Society, XXXII (November 15, 1930), 664.

⁶"The National Committee on Education by Radio," Education by Radio, Bulletin of the National Committee on Education by Radio, I (February 12, 1931), 1.

New York. In order to accurately describe the work of this organization the writer has again quoted, this time from Article II of the Constitution of the Council.

Its object shall be to further the development of the art of radio broadcasting in American education. It shall undertake to do this by close study and analysis of the problems faced by those in the educational world or in the broadcasting industry, or elsewhere, who are engaged in or are sympathetic to educational broadcasting. The Council shall undertake to assemble and interpret the content of broadcast programs and information concerning the practices and experience of broadcasting stations in developing educational features as a part of such programs; shall stimulate and suggest problems and projects for research or experiment with a view to increasing the effectiveness of broadcasting in education; shall present to the educational world from time to time, by conference, by publication, or by any approved method, the opportunities for education in the utilization of broadcasting, as such opportunities are discovered; shall request the cooperation of the broadcasting industry where that seems desirable, in making its facilities available to the cause of education as a public obligation; and finally shall mobilize the best educational thought of the country to devise, develop and sponsor suitable programs, to be brought into fruitful contact with the most appropriate facilities in order that eventually the Council may be recognized as the mouthpiece of American education in respect to educational broadcasting.⁷

⁷The National Advisory Council on Radio in Education, Information Series, Number 1, pp. 23. New York: The Office of the Council, Sixty East Forty-Second Street.

CHAPTER III

HISTORY OF THE RADIO AS AN INSTRUMENT OF EDUCATION

To present a complete and detailed history of education by radio is an impossibility. Such a history has, to the writer's knowledge, never been written. The best that one can do is to enumerate certain detached incidents in the development of radio education and to mention some of the tendencies that have shown themselves.

Telephone broadcasting was unknown to the public until 1920 when Station KDKA at Pittsburgh broadcast election returns. The second broadcasting station is claimed to have been established at the University of Wisconsin during the same year. This station was thus the first to be established by an educational institution. Stations began to spring up rapidly in all parts of the United States. By 1925 nearly six hundred stations were in operation.

One of the first organizations to become interested in educational broadcasting was the Payne Fund. In 1921 its Radio Counsel proposed national programs for public schools to the Federal Bureau of Education.

Broadcasting for adults.- It was not long until several college stations were broadcasting programs of an educational nature. Grove City College, Pennsylvania, appears to have been among the first to organize and carry out a broadcast program. The Literary Digest in 1922 printed an article entitled "College Lectures by Radio." This article mentioned

broadcasting being done by the Universities of Wisconsin, Iowa, and Nebraska, and described plans of New York University to broadcast lectures on virtually all the subjects offered by the university.¹ In November, 1922, it was reported that 57 colleges and universities had broadcasting stations.¹

The Massachusetts Bureau of Education, Division of University Extension, was the first organization to offer genuine educational courses by radio. Actual courses of instruction were broadcast after 1923. Persons who wished to receive credit from these courses enrolled and payed a fee. A great variety of courses was offered. These broadcasts were continued until 1929.

Columbia University was one of the early institutions to become interested in education by radio. Mr. Levering Tyson, of the Home Study Department, felt that the radio would be a valuable aid to the work of this Department. When the American Telephone and Telegraph Company entered the field, it was suggested that the University present serious educational programs as a part of the Company's general experimentation with broadcasting. At the beginning of 1924 a series of lectures was begun. Many subjects were presented. The broadcasts were popular and successful. The work was discontinued in 1927 when difficulties with the new owner of the station, The National Broadcasting Company, made the continuation of the experiment impossible.

¹"College Lectures by Radio," Literary Digest, LXXII (May 13, 1922), 28-29.

On February 18, 1924, the Board of Education of the city of New York began a series of broadcasts over station WJZ. Educational programs were broadcast daily from 2:00 to 2:30 o'clock. The purpose in mind was to keep the public in touch with the work of the schools.

Since this time, a great many stations have broadcast educational programs for the general public. Practically all present stations claim to have some feature of an educational nature. Broadcasters invariably stress the educational phase of their work when applying for privileges from the Federal Radio Commission.

Broadcasting for schools.- The first attempt to use the radio as an aid to the work of a public school was made in New York in 1923. Receiving sets and speakers were installed in the Haaren High School. Thirty pupils in a class in machine accounting were instructed by radio, the broadcast taking place over station WJZ. Six problems involving addition, percentage, cost plus, division, pro rata, etc. were given by the head of the Business Practice Department of the Haaren School. The correct answers were checked with the results obtained by the students. The experiment was considered a genuine success. Officials of the Board of Education began to discuss methods for the immediate broadening of the service.²

Another early experiment with the radio took place in

²Lloyd Jacquet, "Teaching School From a Broadcasting Station," Radio Broadcast, III (August 1923), 331-32.

California in 1923.

Under the direction of Miss Grace Stanley, State Commissioner of Elementary Education, a series of lectures on California geography and history was given by various speakers of note from three scattered stations of the state each Monday morning at 9 o'clock A.M. An immediate result was the cutting of morning tardiness to a minimum in those schools of the state that were fortunate enough to be equipped with receiving sets. In Los Angeles County every primary school has been equipped to receive these lectures as well as Tuesday morning lectures from a local station on similar topics.³

During 1924 an interesting experiment was carried out in the public schools of Oakland, California. Mr. Virgil E. Dickson was authorized to conduct an experiment of eight lessons to be broadcast over the General Electric Station, KGO. A committee of supervisors and teachers planned the course and asked eight teachers to prepare lessons. Six of the eight teachers had never spoken before a microphone. Lesson one counseled with eighth grade students on the courses and problems that would be involved as they entered high school. Lesson two was on folk songs. Lesson three was on geography. Lesson four presented Shakesperian literature. Lesson five discussed the American Indian. Lesson six was given by a commercial teacher. The work consisted in problem solving and checking for accuracy. Lesson seven was a penmanship drill, and lesson eight gave physical-training. For the last three lessons a "studio" class was used by the teacher as a control group to guide the rate of presentation, etc. Fifteen schools

³C. M. Wienand, "Radio in Education," Education, XLV (April 1925), 484.

received the broadcasts. Lessons six and seven were the most popular and helpful. Following the experiment Dr. Dickson said, "Our experiment with radio classroom instruction leads me to predict that development in this field will be very helpful and very rapid."⁴

A significant broadcast was begun by the Sears-Roebuck Station, WLS, in 1924.

In 1924 Radio Station WLS, Chicago, began broadcasting what it called "Cook County Schools Weekly Radio Programs," and later "Little Red School House Programs." These were broadcast during school hours....

Talks were given from week to week on corn, dairying, birds, automobiles, the achievements of boys and girls, and other subjects. Music was furnished by groups of pupils from different schools. Papers were prepared and read by pupils as well as by adults.⁵

This broadcast was very successful and was continued for several years.

In 1925 a series of programs was begun for the students of Cincinnati, Ohio. The following quotation is from an article which appeared soon after the beginning of the series:

The public schools of Cincinnati have initiated elementary educational programs to be broadcast from Station WLW beginning on November 2. Lessons are given for half an hour daily and divided into four periods: musical appreciation, agricultural primer, calisthenics and educational talks upon various subjects. The lessons have been planned to be of interest to children between the ages of five and fifteen years....⁶

⁴Virgil E. Dickson, "Radio in Oakland Schools," National Education Association Journal, XIII (November 1924), 279-82.

⁵Armstrong Perry, op. cit., pp. 50.

⁶"Radio Lessons for the Elementary-School Pupils in Cincinnati," School and Society, XXXII (November 28, 1925), 678.

In October 1925 the Kansas State Agricultural College opened its College of the Air. Inspirational and educational programs for rural schools were broadcast each morning at 9:00 o'clock. These consisted of opening exercises, music lessons, talks on birds, travel, biography, books to read, and current events. Five minutes were given to an agricultural primer and there were discussions of poultry, crops, dairying, and horticulture. There were classes in calisthenics also. Only a few schools were equipped to hear the broadcasts when the programs started. The slowness with which rural schools installed equipment was one of the handicaps of the work.

The foregoing incidents will give one a brief idea of the manner in which education by radio has developed. By 1925 it seems that the use of the radio in the schools had become less of an experiment and more of an established fact. Several attempts made at this time to provide educational material for schools were successful, and continued for a number of years. During 1925 a series of broadcasts of music appreciation for the students of Cleveland, Ohio was begun and continued for several years. In 1926 Atlanta, Georgia, established a Public School of the Air. The Connecticut State Board of Education began a program for rural schools in 1926. In 1928 the national broadcasts of Dr. Damrosch began and have continued to the present time as the best known broadcast for schools. A most valuable and successful broadcast was started in 1929 with the founding of the Ohio School of the Air. During the past

three years a number of highly successful school broadcasts have begun. Several of those that have been carried on up to the present time are described in Chapter IX.

Commercialism and educational broadcasting.- Another phase of the development of broadcasting should be explained in order to make the present situation understandable.

It was reasonable to expect that American business in 1920 would see the commercial value of the new wonder. It did. Radio programs were immediately used for two purposes that shortly became interrelated--entertainment and advertising... In their early efforts to popularize radio, the broadcasters filled up their time on the air with whatever heterogeneous material came to hand....The public, on the other hand, was so filled with amazement over the very existence of radio communication, that the programs could by their novelty alone attract sufficient attention to achieve "success."⁷

When it was discovered that there was a limit to the available bands for broadcasting, various wavelengths began to have a commercial value. Any one could publish a newspaper and use the streets and mails for delivery, but the limitations of radio waves soon made it clear that the ether would be a mere Babel of clashing waves unless order was established. Soon certain stations began to crowd out others. Expensive equipment began to count, and the radio largely fell into the hands of those able to organize it along business lines.⁸

Thus it has come about that the radio has been commercialized. The commercial and the educational groups have not gotten along well. Educators have had to rely largely upon the commercial stations as outlets for their programs. From this development a situation has arisen which is not at all

⁷Levering Tyson, op. cit., pp. 24-25.

⁸W. C. Bagley, "What the Future Holds for Broadcasting into the Schools," School and Society, XXXIII (May 30, 1931), 713-16.

satisfactory to many of the educators. The problem of commercialism and educational broadcasting will have to be solved if progress is to be made in the future.

To obtain a general view of the present situation was a most difficult task. To gather up-to-date information, especially of a statistical nature with respect to the radio in education requires long and careful investigation. This fact is a proof of the great need for scientific research in the field. In the first part of this chapter the statistical material, that was collected, is presented. This information has come from a great many sources. The variety of these sources is so great that an attempt has been made to mention them in the discussion. The writer is of the opinion that the information is, in general, however, as dependable as may be obtained. If any discrepancies with statements made by other individuals are noticed by the reader, it should be remembered that such information of this sort is only of the nature of estimates, and estimates from different sources are not expected to show striking agreement.

Extent of the use of broadcasts by schools. - The material that has been found on this phase of the general subject under discussion has been arranged in the form of a table. Table I shows the extent to which schools have used a number of hours each week of the past and present. The number of states in which this practice is reported, the number of schools that broadcast regularly, the number of pupils that listen regularly, and the number of teachers who receive broadcasts that are

CHAPTER IV

A GENERAL VIEW OF THE PRESENT SITUATION

Extent of the Use of the Radio in Educational Institutions

To obtain a general view of the present situation was a most difficult task. To gather up-to-date information, especially of a statistical nature with respect to the radio in education requires long and careful investigation. This fact is a proof of the great need for scientific research in the field. In the first part of this chapter the statistical material, that was collected, is presented. This information has come from a great many sources. The variety of these sources is so great that no attempt has been made to mention them in the discussion. The writer is of the opinion that the information is, in general, however, as dependable as may be obtained. If any discrepancies with statements made by other individuals are noticed by the reader, it should be remembered that most information of this sort is only of the nature of estimates, and estimates from different sources are not expected to show striking agreement.

Extent of the use of broadcasts by schools.- The material that has been found on this phase of the general subject under discussion has been arranged in the form of a Table. Table I shows the extent to which schools have used a number of broadcasts of the past and present. The number of states in which the broadcast is regularly heard, the number of schools that listen regularly, the number of pupils that listen regularly, the number of advance bulletins or teachers' manuals that are

TABLE I

EXTENT OF USE BY SCHOOLS OF EDUCATIONAL BROADCASTS

Broadcast	Year	States	Schools	Pupils	Manuals
Hamline University.....	1929			20,000	
Ohio School of the Air.....	1929	29	8,000 rooms		
Colorado State Teachers College.....	1930	1	25	2,500	
Damrosch Music Appreciation: Broadcast.....	1931			10mil- lion	
Standard School Broadcast..	1931	3	800		
WMAQ Public School Broadcast.....	1931		800		3,500 monthly
WRUF Music Appreciation Broadcast.....	1931	1		7,000	
American School of the Air.	1931		40,000	8 mil- lion	50,000

sent out to schools, and the year for which the information was given are included in this Table. When the information was lacking, the spaces have been left blank.

Extent to which schools in various states are equipped.-

Facts concerning the extent to which the schools in several states are, or will be, equipped are shown below. The year for which the information was given is placed in parentheses after the name of the state.

- New Jersey (1929) - 50% of the schools
- Nebraska (1929) - 25% of the schools
- Massachusetts (1927) - 57 schools
- Minnesota (1931) - 90 schools
- Ohio (1930) - 416 schools
- West Virginia (1931) - 50% of the schools
- Colorado (1931).... - 25% of the schools

Alabama (1931)	}	The State Boards of Education are planning campaigns to get radio in all schools in these states.
Georgia (1931)		
Mississippi (1931)		
West Virginia (1931)		
South Carolina (1931)		

Extent to which schools in various cities are equipped.-

A few facts were gathered concerning the radio equipment in the schools of various cities. They are as follows:

Atlanta, Georgia (1930)	- all schools
New York City (1929)	- 350 schools
Dallas, Texas (1929)	- practically all schools
Cincinnati, Ohio (1929)	- all new schools to be wired
Dayton, Ohio (1930)	- all schools
Rochester, New York (1931)	- 37 schools
Baltimore, Maryland (1931)	- 31% of the schools

Centralized-radio systems.- How many of the schools mentioned above are equipped with centralized-radio systems there is no way of knowing. The writer compiled a list of one hundred and fifty schools that have centralized equipment. No doubt a great many more schools are supplied throughout the country with this type of equipment. A questionnaire asking for various items of information was sent to these one hundred and fifty schools. Sixty of the replies contained information concerning the nature of the equipment, etc. A summary of these replies may be of interest here. The various types of rooms that are equipped in these sixty schools are listed below. After each type is placed the number of schools which

have one or more rooms of that type served by the centralized installation.

Class rooms	49
Auditorium	50
Gymnasium	38
Cafeteria	20
Art rooms	2
Music rooms	3
Library	7
Study rooms	3
Shops	5
Laboratories	2
Domestic science rooms	2
Faculty rooms	5
Assembly rooms	1
Swimming pool	1
Conference room	1
Play rooms	1
Offices	5
Halls	1

The average number of classrooms equipped for the forty-nine schools which have one or more classrooms equipped was twenty-five. One school has its playground equipped with speakers. Three schools have made plans to equip their playgrounds in the future. In the sixty schools studied, the equipment has been installed for periods of time ranging from installations just being completed up to four years. The

average for the sixty schools was one year and three months.

The radio-Victor Corporation of America a few years ago established an architectural advisory service which treats centralized radio equipment as a necessity for the thoroughly modern school building.

Present Methods and Techniques

Broadcasting techniques.- Because radio education is young, there are still many faults to be found with present methods.

Unfortunately, educators up to this time have not specialized in radio technique, and radio program builders have not specialized in education. We therefore have the problem of applying radio technique to educational programs.¹

Radio is a show business. It must use showmanship to hold its audience. The commercial broadcaster has a well defined technique to accomplish this. The educator has often gone into the studio without any conception of the methods that must be used to make broadcasting successful. He has tried to use classroom methods and it has not worked. The educators, however, are awake to this problem. Specific directions have been prepared in some cases for the guidance of inexperienced persons.

The teacher's manual.- Educators have been rather successful in applying those methods that could be taken over bodily from education to radio. An example of this is the use of the

¹John W. Elwood, Radio Broadcasting and its Relation to Education, Little Books on Broadcasting, New Series No. B, New York: National Broadcasting Company, pp. 13.

teacher's manual.

Mere "listening in" may be a profitable expenditure of time in connection with an occasional program; but the more significant and enduring benefits can come, if contemporary educational theory teaches us the truth, only when the learner is inspired to some effort of his own.²

Therefore,

An important part of every successful school broadcast... is the teacher's manual containing suggestions for classroom aids. Programs coming into the schools totally unprepared are invariably unsuccessful.³

Radio as a supplement to the school.- The radio is a supplement to the work of the school. No attempt has been made to supplant the work of the classroom teacher by the use of the radio. So far it has been only an aid. What the future will bring forth we cannot say.

Commercialism and Educational Broadcasting

The problem of commercialism and broadcasting is one that perhaps is attracting more discussion than any other. That the radio has been commercialized there is no doubt. Ninety-three percent of the radio channels have been turned over to commercial interests, while the educational institutions of the country must be content with less than seven percent.⁴

²William C. Bagley, "Radio in the Schools," Elementary School Journal, XXXI (December 1930), 256-58.

³Alice Keith, "Radio as a Classroom Aid," Grade Teacher, XLVII (June 1930), 793.

⁴"How Does Your State Stand," Education by Radio, Bulletin of the National Committee on Education by Radio, I (February 26, 1931), 9.

The educational institutions have been forced from the air.

Practically all of the college and university broadcasting stations are obliged to share time on their wavelengths with commercial stations, and the reason commonly given for their not having needed time, power and wavelengths is that they do not reach as large audiences as the amusement stations.⁵

Thus the educators have had to present their programs over the commercial stations. Often the time of the broadcasts has been cut down and changed to undesirable hours to make room for paying advertising programs to such an extent that to carry on the educational work became useless. On the other hand, many of the commercial stations have not shown this attitude. Some of the commercial stations have been more active than the educators in providing educational programs. For example, the Columbia Broadcasting System is now providing educational broadcasts at an expense far in excess of a half-million dollars annually. Occasionally the educators have refused to accept the offers of the commercial stations.

One national chain of stations offered a daily half-hour period for the school year 1929-30, with broadcasting facilities for reaching 96% of the schools of the country. This time, at advertising rates, is valued at \$333,000. At the beginning of the school year no group of educators had been found to use this time for programs for schools, although a diligent search had been made for several months.⁶

⁵Armstrong Perry, "Report of Armstrong Perry to the Advisory Committee on Education by Radio," Report of the Advisory Committee on Education by Radio, Appointed by the Secretary of the Interior, Washington, D. C.: Advisory Committee on Education by Radio, United States Department of the Interior, 1930, pp. 56.

⁶Armstrong Perry, Radio in Education, New York: The Payne Fund, 1928, pp. 75.

One proposed solution to the problem is the suggestion that a number of broadcasting channels be set aside for the exclusive use of educational institutions.

The National Committee on Education by Radio is sponsoring a bill in Congress to set aside fifteen percent of the radio broadcasting channels which are or may become available to the United States for the use of educational institutions. This bill was introduced into the Senate by Honorable Simeon D. Fess of Ohio. It will be introduced again into the Seventy-Second Congress when it convenes in December. It is a conservative measure and deserves the support of everyone who is honestly interested in the development of the radio art.⁷

⁷Joy Elmer Morgan, "Education's Rights on the Air," Education by Radio, Bulletin of the National Committee on Education by Radio, I (June 18, 1931), 73.

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CHAPTER V

RADIO EQUIPMENT NOW AVAILABLE FOR SCHOOL USE

Types of Equipment

In order to understand the use of radio equipment in educational institutions, one must have at least a working knowledge of the types of equipment now used in schools. A general description of such equipment is given in this Chapter. Technical information is not essential to an understanding of the method of using the apparatus. Also such discussions can best be handled by the engineer who is skilled in that phase of the subject. A detailed or technical discussion has therefore been omitted.

The individual receiver.- A description of the individual radio receiving set is hardly necessary for the understanding of one who has lived during recent years. Individual receivers are used in a great many schools. They may be installed in the auditorium, cafeteria, offices, gymnasiums, or classrooms. In order to secure the required volume in especially large rooms such as auditoriums, special power speakers or several ordinary speakers may be installed. Occasionally extension speakers are installed in other rooms. Then the output of the set is available to several other groups in other parts of the building. Much more convenient equipment for this type of service is available, however. The individual receiver is used in the school in exactly the same manner in which it is used in the home.

The centralized-radio system.- The most convenient and efficient type of equipment to have in the school is the centralized-radio system. Other names for this type of equipment are "program service system," and "public address system." Briefly, the centralized-radio system is an arrangement of means by which sound from a single source is controlled and distributed to a large number of individual rooms. The uses of this system may be discussed under three heads as defined in a recent book:

The operation of any system consists essentially of (1) obtaining an incoming signal, (2) amplifying the signal in a usable form, and (3) distributing the signal to operate sound projectors.¹

The incoming signal may be obtained from three different sources: a radio receiving set, a magnetic phonograph pick-up, or a microphone. The radio receiving set is generally the first source considered. This may be an ordinary set of standard make which is purchased separately from the rest of the equipment. In this case the output of the set, instead of going to a loud-speaker, goes to the amplifying unit of the centralized system. In most installations, however, the radio receiver is a component part of the equipment and is built directly into the system. In either case the receiving set is used in exactly the same manner as the radio is used in the home. Whatever is "picked-up" by the receiver is

¹Edward Charles Blom, Radio and Electrical Power Supply Equipment for Schools, Teachers College Contributions to Education, No. 409, New York: Teachers College, Columbia University, 1930, pp. 28

distributed by the system. Apparatus for reproducing phonograph records is usually included in centralized systems, though it may be omitted. An electric turn-table is generally supplied. The fluctuations on the record are then transformed into electrical vibrations rather than sound vibrations by means of a magnetic pick-up. These electrical vibrations are impressed upon the centralized system and actuate the loud speakers in the classrooms. The microphone is also a standard part of the equipment. The microphone transforms sound vibrations into electrical vibrations. These are then distributed by the system in exactly the same manner as is the output of the magnetic phonograph pick-up. Arrangements are usually made for the microphone to be used in the principal's office and in the auditorium, and in any other places from which it is desired to originate material for the system.

The second step in the operation of the centralized system is the amplification of the signal. The amplifying unit consists essentially of equipment which builds up the signal to the desired volume level, and furnishes sufficient current to operate all reproducers or loud-speakers at the desired level. Controls for the proper regulation of volume are of course included in this part of the equipment.

The third step in the use of the equipment is the distribution of the amplified signal to the speakers which have been installed in the various rooms. This is accomplished by means of a wiring system which carries the electrical

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energy from the amplifying unit to each speaker, and is controlled by means of a control panel. By means of the control panel any number of rooms or combination of rooms may be selected to receive one program, while an entirely different program from another source is being sent at the same time to another group of rooms. Where four channels are provided, as many as four different programs may be distributed simultaneously to four separate groups of rooms without interference.

In addition to the centralized equipment a volume control is usually installed in each room. Thus the volume level, if not regulated at the control station in such a manner as to meet the requirements of the individual room, may be further regulated in that room.

A concrete illustration of the use of the centralized-radio system may be an aid to a better understanding. Let us suppose that a certain elementary school has been equipped with an efficient and complete system. At ten-thirty A.M. a broadcast from a School of the Air takes place. The program this morning is a history dramatization. The seventh and eighth grade classes are to listen in. Shortly before ten-thirty the principal goes to the centralized system, which we will suppose is installed in his office, and tunes the broadcast receiver in on the desired station. A "monitor" loudspeaker included in the apparatus informs him when the station is tuned in properly. At ten-thirty he throws the switches

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which will send this program to the proper rooms. He adjusts the volume, judging by the output of the monitor speaker. One of the classrooms in which pupils are listening to the program is small. The teacher in charge decides that the volume is too great for that size room. She approaches the volume control in the room and adjusts the volume until she is satisfied. At ten-thirty recess is also scheduled for a group of younger students. It happens to be raining. Instead of going outdoors for recess, the pupils assemble in a playroom in the basement. By means of the phonograph reproducing apparatus, another program taken from records is sent to this room to entertain these students during the recess period. While all this is going on, the principal finds that he must have a short conference with one of the boys. Looking up his schedule he finds that the boy is in one of the rooms not receiving material over the centralized system. Using a third channel, he speaks through the microphone on his desk to the proper room announcing that he wishes this boy to come at once to the office. Thus the centralized radio system has been used simultaneously for three different purposes within the course of a half-hour.

Cost of Equipment

Reliable information as to the cost of specific makes of equipment can best be secured from the manufacturers of equipment. Prices vary to such an extent that any figure that could be quoted would be representative of only a few makes.

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Prices, therefore, have not been quoted from dealers' catalogues or from advertising matter. The questionnaire that was sent out to school principals included an inquiry as to the cost of the equipment in the school concerned. As to the completeness of the installations the writer has no information. He only knows in most cases the number of rooms equipped with speakers and whether apparatus for reproducing phonograph records is included. The information from a number of the schools was as follows:

- \$800 - 25 rooms, and record reproducer
- \$1000 - 23 rooms, and record reproducer
- \$1400 - 8 rooms, and record reproducer
- \$3500 - 25 rooms, auditorium, gymnasium, and record reproducer
- \$5000 - 21 rooms, auditorium, gymnasium, faculty room, conference room, and record reproducer
- \$6000 - 17 rooms, auditorium, cafeteria, and record reproducer
- \$7500 - 69 rooms, auditorium, gymnasium, and cafeteria
- \$7500 - 20 rooms, auditorium, gymnasium, library, shops, and record reproducer
- \$10000 - 100 rooms, auditorium, 2 gymnasiums, and record reproducer

The average number of rooms equipped with speakers was 25. The average cost per installation was \$2814.

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CHAPTER VI

PURPOSES FOR WHICH RADIO EQUIPMENT IS USED IN EDUCATIONAL INSTITUTIONS

A Questionnaire Study of the Purposes

In Chapter I an attempt to gather some information on the present status of the radio in educational institutions was made by means of a questionnaire which was sent to a group of school principals. One section of the questionnaire dealt with the uses of the radio apparatus. It will be recalled that the questionnaires were sent only to schools which are equipped with centralized radio apparatus. This chapter is concerned then primarily with the purposes for which the centralized equipment is used, although individual receiving sets may be used for many of these same purposes. After a preliminary investigation, a list of purposes for which centralized radio installations have been used was compiled. Those that seemed to be of most importance were listed on the questionnaire. Parentheses were placed before each item. Heading the list the following directions were placed:

The following list contains purposes for which centralized radio systems have been used. Add below any other uses not listed here which you have made of your equipment. Then, by placing numbers in the parentheses, rank in order of importance, the three uses which have been most significant in your school. Indicate other uses by placing check marks in the parentheses.

Under the item "Instruction" the person receiving the questionnaire was asked to list the subjects in which the

equipment had been used for purposes of instruction. Fifty-eight superintendents replied. Table II gives a summary of the replies to the general purposes listed:

TABLE II
PURPOSES FOR WHICH RADIO EQUIPMENT IS USED
WITH THEIR RANK IN IMPORTANCE AS GIVEN
BY FIFTY-EIGHT SCHOOL PRINCIPALS

Purposes	Number of Times Mentioned	Rank in Importance
1. For material of external origin:		
Instruction.....	31	2
Receiving material for assembly programs..	30	5
Receiving lectures on vocational guidance..	18	7
Receiving counsel on college entrance.....	7	
2. For material of external or internal origin:		
Music for school social affairs.....	21	4
Entertainment at noon.....	17	8
Music for assembly or dismissal.....	17	6
Programs for parent-teacher meetings.....	13	
Music for school plays and movies.....	11	
Directing physical education classes.....	7	10
"Radio" assemblies.....	2	
Indoor recess on stormy days.....	1	
3. For material of internal origin:		
Making announcements.....	36	1
Amplifying local assembly programs.....	27	3
Carry greetings of visitors to pupils.....	14	
Directing fire drills.....	12	9
Student broadcasting.....	4	
Tests.....	4	
Playground and athletic-field activities..	2	
Stimulate school savings.....	1	

Figure 1 shows the replies for the specific item, "instruction."

It should be mentioned that in some cases the purposes for which the equipment is used are affected by the limitations of the apparatus itself. Several schools, although their

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Music appreciation	27	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
History	14	XXXXXXXXXXXXXXXXXXXX
Science	8	XXXXXXXXXX
English	7	XXXXXXX
Geography	5	XXXXXX
Social science	5	XXXXXX
Literature	5	XXXXXX
Language	3	XXX
Mathematics	3	XXX
Health	3	XXX
Current events	2	XX
Nature study	2	XX
Art	1	X

Fig. 1. - Number of schools using the radio for instruction in various subjects in a group of thirty-one schools which use the radio for some type of instruction.

radio systems are of the centralized type, are handicapped by incomplete installations. This in some cases was necessitated by the fact that the complete installation could not be financed at one time. Therefore the equipment is being added as the school is able to purchase it. Two types of incomplete installations were most prominent in this study: those in which the auditorium only is equipped, the apparatus serving only as an amplification system; and those in which the classrooms only are equipped and in general the microphone in the principal's office also not installed, the apparatus serving in this case only to receive broadcast programs.

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Discussion of the Purposes

It will be noted from a brief study of Table II that the purposes for which the radio equipment is used may be divided into three groups: distribution of material originating outside of the school, distribution of material originating either outside of or within the school, and distribution of material originating within the school. The purposes will be discussed according to these divisions.

Uses of the radio equipment in distributing material of external origin.- The most frequently mentioned and the most important purpose for which the centralized equipment is used in distributing material originating outside the school is that of instruction. It is claimed that the radio can be used as a valuable supplement to the work of the teacher. The bulletins and advance information sent out by schools of the air enable the teacher to plan her work so that broadcasts of an informational nature may be used as a part of the regular school work.

The planning of assembly programs is often a problem for the teacher in charge. The radio equipment offers her the opportunity of using the radio to receive appropriate broadcasts of a musical, inspirational, or informational nature to be used as part of the assembly program. In case of a broadcast of special interest an assembly may be called in order that the students may "listen in."

The replies to the questionnaire indicate that receiving lectures on vocational guidance for the students is one of the

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most prominent uses of the radio. A great many broadcasts intended for schools have included in their schedules talks on vocational guidance by leaders in various fields.

Closely associated with vocational guidance is guidance for high-school students who are contemplating attendance at college. This is another purpose for which the equipment is used to receive talks and lectures by prominent men outside of the school.

Uses of the radio equipment in distributing material of either external or internal origin.- In the case of uses in this group entertainment is the greatest factor concerned. The material used may be obtained either by the reception of broadcast programs, or by the reproduction of phonograph records within the school. The reproduction of phonograph records, however, plays a relatively unimportant part. Replies to another section of the questionnaire revealed, that of sixty schools having centralized systems, only thirty-seven used phonograph records. For these thirty-seven the average amount of material originating from records was seventeen and six-tenths percent of the total. Thus in most of the purposes in this group the broadcast material plays by far the more important part.

The most often mentioned and the most important use made of the equipment in this second group is the furnishing of music for entertainment at school social affairs. Broadcast programs may be received, or the phonograph attachment may be used if it seems more desirable. Thus good music is available

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without the need of employing an orchestra.

The next in prominence of the uses in this group is the furnishing of music, often marches, for assembly and dismissal. Music before classes begin may be desirable, and marches are often used for dismissal to preserve order.

A rather new use of the radio equipment seems to be to furnish programs for parent-teacher-association meetings. Some of the broadcasting stations and schools of the air have broadcast special programs to be used for this very purpose.

Entertainment during the noon hour is also popular in some schools. Music in the cafeteria lends enjoyment to the noon meal. In some schools the students use the noon-hour entertainment for dancing.

It is usually considered necessary to have music between the acts of school plays. Also when motion pictures are shown in the school, unsynchronized music is often used to accompany the picture. The radio equipment may be used to supply this entertainment.

The radio has also been used as an aid in the instruction of physical-education classes. Directions by instructors have been broadcast to be used directly by the classes. The most common use of the radio in this case, however, seems to be to furnish music to accompany calisthenics.

A few schools hold what they call "radio" assemblies. Instead of assembling in the auditorium, the students listen to the assembly program in their own classrooms. The programs used may originate either in the principal's office, or may be

received from the air. The radio installation carries the material to the students in the classrooms.

One elementary school reported that three basement play-rooms have been fitted with loud-speakers. On rainy days the students assembly for recess in these rooms and are entertained by the radio.

Uses of the radio equipment in distributing material of internal origin.- The uses of the equipment in this third group seem to be of as great prominence as in either of the others. In the case of a few schools reporting, this was almost the sole use made of the equipment. For this group of uses, the microphone is a necessary item. The material distributed consists largely of speaking, and is entirely for the satisfaction of local needs.

The most important use, according to the questionnaire, of present radio installations falls in this group: that is, the making of announcements. The principal from his office may speak over the system to any room or to any group of rooms. Announcements to the entire school may be made quickly and without the necessity of sending a note to each room, or individual students may be called from any room.

The use which ranks next in prominence in this group is the amplification of local assembly programs. In a large auditorium, especially with the use of student talent, it is often difficult for those in the rear to hear. The apparatus then serves as an amplification system, a microphone before the performer picking up even a whisper so that it may be

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heard throughout the room.

Often prominent persons are visitors at the school. It is often considered valuable for growing young persons to meet these people. Generally it is necessary to call an assembly in order to make this possible. It is a much simpler matter to let such persons speak for a few minutes to the students over the radio system, and the voice and the message conveyed may be almost as valuable as the visual experience in the auditorium.

It has been claimed that the direction of fire drills is one of the most distinctive and most valuable uses of radio installations. The loud speakers in the halls and rooms may carry a voice sufficiently amplified that it may be heard above the noise and confusion, when the unaided human voice could not attract attention. Simple directions given firmly and calmly may facilitate the safe exodus of the children from the building. Also the radio offers the opportunity of giving the alarm to different groups at different times. Thus points of danger may be cleared first, or the smaller children, who might be trampled by the larger children, may be removed from the building first.

The possibility of student broadcasting seems to offer a unique and interesting use of the equipment. A group of students may prepare a dramatization which is "broadcast" from the auditorium and "received" in the classroom by the other members of the class. Speeches for public speaking classes may be presented over the radio, and the interest

aroused used as a means of motivating work.

A few schools have used their equipment to give tests. These usually take the form of questions or items which may be answered with a word or phrase. The pupils write down their answers as the questions come from the loud speaker.

Two schools represented in the questionnaire returns use the radio in connection with playground and athletic field activities. On the playground directions as to games, etc. for a large number of students may be given through loud speakers installed on the playground. One school used the radio to give directions for marching and drill on the athletic field.

The writer found one school which used the radio in connection with school savings. The exact method of use was not described, but it may have consisted in some sort of spoken directions or encouragement to the school during the savings period.

Use of the radio equipment for instruction purposes.-

A brief study of Figure 1 will show the present trends in the use of the radio for instruction. It will be noticed that music appreciation is by far the most important subject taught over the air. The appreciational factor has been stressed in school broadcasts. It should be mentioned that there is no school subject in which instruction by radio has not been attempted. Every subject in the curriculum has been used. Why certain subjects have been chosen above others the writer has not been able to determine. Music lends itself most readily

to radio broadcasting and reception. History can be readily dramatized, and thus its presentation becomes effective. The present selection of subjects may be partly the result of the unscientific manner in which radio instruction has been developed.

The questionnaire which was sent to school principals also asked the advantages of the use of centralized-radio equipment in schools. A list of advantages was compiled and listed on the questionnaire. Directions similar to those given for the section on the uses of the equipment were placed before the list. In Table III the replies to this part of the questionnaire are tabulated:

TABLE III
ADVANTAGES OF THE USE OF RADIO EQUIPMENT
WITH THEIR RANK IN IMPORTANCE AS GIVEN
BY FIFTY-EIGHT SCHOOL PRINCIPALS

Advantages	Number of schools in which mentioned	Importance rank
Inspiration of hearing leaders.....	36	7
Convenience in making announcements, etc.....	34	3
Enriches the curriculum.....	28	4
Utilizes time of some programs.....	25	9
Teacher's efforts augmented by experts.....	27	2
Helps visualize instruction.....	27	6
Partially takes the place of the bulletin board.....	21	5
Prevents pupils' boredom.....	20	8
Supplies more personality than textbooks.....	17	10
Provides demonstration for the teacher.....	9	
Affords chance for teacher to study class.....	7	
Relieved teacher from routine teaching.....	9	
cheapens entertainment for social affairs.....	8	
Stimulated research and study.....	5	10
Puts parents in touch with the school.....	4	

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CHAPTER VII

ADVANTAGES OF THE USE OF RADIO EQUIPMENT
IN EDUCATIONAL INSTITUTIONS

A Questionnaire Study of the Advantages

The questionnaire which was sent to school principals dealt also with the advantages of the use of centralized-radio equipment in schools. A list of advantages was compiled and listed on the questionnaire. Directions similar to those given for the section on the uses of the equipment were placed before the list. In Table III the replies to this part of the questionnaire are tabulated:

TABLE III

ADVANTAGES OF THE USE OF RADIO EQUIPMENT
WITH THEIR RANK IN IMPORTANCE AS GIVEN
BY FIFTY-EIGHT SCHOOL PRINCIPALS

Advantages	:Number of: : Times :Mentioned:	:Rank in: : Impor- : tance :
Inspiration of hearing leaders.....	36	3
Convenience in making announcements, etc....	34	1
Enriches the curriculum.....	28	4
Cultural value of some programs.....	28	7
Teacher's efforts supplemented by experts....	27	2
Helps vitalize instruction.....	27	6
Partially takes the place of the auditorium.:	21	5
Broadens pupils' horizons.....	20	9
Supplies more personality than textbooks....	17	8
Provides demonstrations for the teacher.....	9	
Affords chance for teacher to study class....	9	
Relieves teacher from continual teaching....	9	
Cheapens entertainment for social affairs....	8	
Stimulates research and study.....	5	10
Puts parents in touch with the school.....	4	

The number of times that each advantage was checked and the relative importance of each as shown by the rankings on the questionnaires are shown on the table.

Discussion of the Advantages

If one does a bit of investigating in the subject of radio, he will find that a great many more advantages than disadvantages are mentioned. The writer compiled a preliminary list of the advantages and disadvantages before framing the questionnaire. He found thirty-nine items mentioned as advantages; twenty-eight items mentioned as disadvantages.

Advantages discovered by the questionnaire.- The most frequently mentioned advantage, it will be seen from Table III, is the inspiration derived from listening to broadcasts by great national leaders. Prominent men have often consented to assist with the presentations of schools of the air. Some of the prominent men who have cooperated with the Ohio School of the Air are the Governor of Ohio, the Governor of Kentucky, Dr. Henry Turner Bailey, Edwin Markham, and Edmund Vance Cooke. State and national leaders may often be heard by tuning in on broadcasts for the general public. Occasionally the inspiration gained by contact with a great man has been a factor in stirring a young person to great achievements in later life. It has been said that educators can do two things in connection with this situation: they can let pupils hear these leaders today, or they can wait for later generations to study them in textbooks.

The advantage which ranks second in number of times mentioned and first in importance is that of convenience. Under this head we may include most of the internal uses of centralized radio equipment. That the availability of equipment which can be used for this group of purposes is a great advantage because of its convenience cannot be doubted. The following comments by two of the principals who returned questionnaires are interesting in this connection:

There must be a decided change in the offering before a centralized-radio system can profit much from broadcasts from the outside. Most of its value lies in its internal use at present.

Except for the music appreciation hours we have found very little use for the programs over the air. However convenience in making announcements justifies installation of the equipment.

The fact that the use of radio equipment makes an enrichment of the curriculum possible is also found to be important. The radio adds a great many features to the school work which it would otherwise be denied. To have a symphony orchestra in each classroom would be an impossibility. Yet the product of such an organization is readily available to any school that has a radio. Many topics of interest which would otherwise be denied the students are made a part of their regular work. To observe the inauguration of a governor or of a president is part of the experience of very few students. Yet any student may participate in such ceremonies if a radio is available.

The cultural value of some programs is another frequently mentioned advantage. When a course in music appreciation can

give students an understanding and a liking for the best music in contrast with the type of music which they hear most often out of school, and when lessons in art, literature, etc. can direct them to the finer things in life, the cultural value of the radio readily becomes apparent.

The fact that the radio can be used to supplement the work of the teacher is ranked second in importance by the school principals, but is actually made use of in a comparatively small number of schools. This advantage of the radio installation refers largely to its use as an instrument of instruction. A recent study was made by the University of Wisconsin. The study can best be described by the following passages taken from a report by a recent magazine:

A survey was recently made by three professors, Professor E. B. Gordon, of the school of music; Professor Guy Fowlkes, of the school of education, and Professor Henry L. Ewbank, of the department of speech. They were aided by Miss Mary Webb, research assistant in education....

Two courses of study, music and current events, were taught by radio in making the survey, according to the report made recently. More than 500 school children in a large number of Wisconsin grade schools listened to the instruction broadcast to them over the radio, and then took their final examinations, which showed that in the teaching of music, the radio is decidedly superior to direct classroom instruction. In the teaching of current events, although the results gained were not so decisive, the tendency was in favor of the radio...

The results showed that children could learn to sing two-part songs over the radio, and that by such instruction they gained a large appreciation of music and a knowledge of musical instruments. They also learned rhythm work and became acquainted with the music field through music news items.¹

Studies of this nature are not common. A variety of

¹"Education by Radio in Wisconsin," School and Society, XXXII (September 27, 1930), 418-19.

factors may be responsible for the fact that radio instruction has proven to be effective. When the equipment is new the novelty of the thing may create interest. But several authorities have testified that even when the novelty has worn off the interest still remains. Two good reasons why radio instruction is effective are these: 1. The radio lessons are generally presented by persons who are recognized experts in their fields. 2. The radio lessons are presented with much more care than are lessons for ordinary classroom presentation.

The presence of the radio in the school may help to make the lessons a vital, living thing in the life of the student.

"Children who have never seen the sea hear voices from the furthest bounds; children who know of snow only by hearsay listen with shining eyes to the explorer of the poles. And the teacher, who perhaps has never been beyond the boundaries of her own State, may illustrate her lesson in geography with first-hand information."²

For schools that are not equipped with an auditorium, the radio equipment may serve a useful purpose by partially taking the place of the auditorium. Even when an auditorium is available, many things can be taken care of over the radio with a great saving of time and energy when otherwise an assembly would be necessary.

The many new things which a radio installation can bring to the student can hardly help but broaden his horizon.

²John W. Elwood, op. cit., pp. 8.

"The loud-speaker may transport the child outside the four walls into the world beyond and give him glimpses of the wise, fascinating experiences that go to make up life. It brings something incredibly colorful and marvelous to the schoolroom."³

Students become accustomed to textbooks. They are all alike as far as the student is concerned. Little of the personality and enthusiasm of the author can be shown in the textbooks he writes. With the radio it is different. The enthusiasm and eagerness of a teacher who is giving a broadcast lesson from his personal experience add a weight and authenticity to his presentation which the textbook cannot convey.

The value of the next advantage mentioned in the Table is best expressed by an authority in the field of education by radio.

A most important value that programs of the direct instructional type have been found to have concerns the classroom teacher rather than the pupils. It is illustrated by the remark of a teacher who had been using in her class broadcasts of lessons in arithmetic given by an especially skillful instructor. When asked what her pupils got from the lessons, she replied that she did not know, but she herself had learned from the broadcasts how to teach certain topics in arithmetic much more effectively than she had ever been able to teach them before. There would seem, then, to be a fairly significant function of the radio in bringing to the attention of all teachers certain of the techniques that have been developed and used successfully by the most competent teachers.⁴

When the teacher is busy directing the work of the class,

³John W. Elwood, op. cit., pp. 7.

⁴William C. Bagley, "What the Future Holds for Broadcasting Into the Schools," School and Society, XXXIII (May 30, 1931), 713-14.

she has little time to spend in observation. The reception of a radio program gives to ^{the} teacher the opportunity to study the class and to note how various members react to instruction from another source. Thus she is often able to make discoveries which are of value to the students and to herself.

The reception of a broadcast program also gives the teacher a few minutes relief from the strain of continual teaching, and the interesting features of the broadcast may provide her with a bit of recreation.

When the radio may be used to take the place of an orchestra as a means of entertainment at school social affairs, the possibility of its becoming an aid to economy becomes apparent. To employ a professional orchestra is certain to be expensive. To use the radio equipment costs little.

Another advantage claimed by a few schools is that the use of the radio results in increased voluntary research and study. Experience indicates that the radio may serve as a powerful means of motivation. The privilege of presenting a student broadcast for the rest of the class may serve as an incentive toward the preparation of an otherwise irksome dramatization. Skillfully taught lessons on literature may interest the student in the reading of better books. It is a proven fact that in many cases broadcasts of current events stimulate students to outside reading, especially of newspapers.

It is well known that parents do not keep in close touch with the schools. Most of what they know of the school comes

second-hand from their children. When part of the work of the school is available through radio broadcasts, the parents have the opportunity to know what is being taught first-hand. Investigations show that a surprising number of parents actually do keep in closer touch with the school through this method.

Other advantages. Two other advantages not revealed by the questionnaire should perhaps be mentioned. It has been said that the impersonality of the radio apparatus is one of its limitations. Yet this factor has been claimed by some to be an advantage. The impersonality of the radio provides that no features except the spoken words of the broadcast will be present to attract the attention of the listeners. This absence of distractions enables the students to concentrate better on the material that is being presented.

The second advantage exists in connection with rural schools. The opportunities of rural students are generally much less than those of urban students. But the radio is no respecter of schools or districts. Any school that has receiving equipment may benefit by the programs that are broadcast. Thus the rural school may to a small extent at least place itself on a par with city schools. This ability of the radio to help equalize the opportunities of rural and urban schools has been stressed by some of the leaders in the education-by-radio movement. The University of Wisconsin has recently made application to the Federal Radio Commission for

permission to construct a state owned station. To aid the rural schools in this manner is one of the reasons given for the desire to construct the station.⁵

⁵Glenn Frank, "Wisconsin Uses Radio for Education," Education by Radio, Bulletin of the National Committee on Education by Radio, 1 (February 19, 1931), 5.

The results of the use and advantages, The results to this section of the questionnaire have been compiled into Table IV:

TABLE IV

DISADVANTAGES OF THE USE OF RADIO EQUIPMENT WITH THESE FACTS IN IMPORTANCE AS GIVEN BY FIFTY-EIGHT SCHOOL PRINCIPALS

Disadvantages	Number of Responses	Percentage	Rank
Not enough educational programs available	48	81.0	1
Difficult to fit programs into the schedule	40	67.8	2
Programs not correlated with the curriculum	35	58.6	3
Inefficient average information	17	28.8	4
Lack of a radio teaching technique	15	25.5	5
Absence of speaker lesson interests	11	18.8	6
Radio does not entertain to schoolroom	9	15.2	7
Faculty equipped	6	10.2	8
Encourages teacher laziness	4	6.7	9
Conservative prejudice in the community	2	3.3	10
Too expensive	2	3.3	10

The disadvantages are discussed below in the order in which they appear in the Table.

Discussion of the Disadvantages

It will be noted that there is a great deal of agreement among school principals in far as the first three items in

CHAPTER VIII

DISADVANTAGES OF THE USE OF RADIO EQUIPMENT IN EDUCATIONAL INSTITUTIONS

A Questionnaire Study of the Disadvantages

The same method was used to determine the disadvantages of the use of radio equipment in schools as was used to determine the uses and advantages. The replies to this section of the questionnaire have been compiled into Table IV:

TABLE IV

DISADVANTAGES OF THE USE OF RADIO EQUIPMENT
WITH THEIR RANK IN IMPORTANCE AS GIVEN
BY FIFTY-EIGHT SCHOOL PRINCIPALS

Disadvantages	:Number of: : Times : Mentioned	: Rank in : Impor- : tance
Not enough educational programs available...	42	1
Difficult to fit programs into the schedule.	40	2
Programs not correlated with the curriculum.	35	3
Insufficient advance information.....	17	5
Lack of a radio teaching technique.....	16	4
Absence of speaker lessens interest.....	11	:
Admits cheap entertainment to schoolroom....	9	:
Faculty equipment.....	6	:
Encourages teacher laziness.....	4	:
Conservative prejudice in the community.....	2	:
Too expensive.....	2	:

The disadvantages are discussed below in the order in which they appear in the Table.

Discussion of the Disadvantages

It will be noted that there is a great deal of agreement among school principals as far as the first three items in

Table IV are concerned. It will be noted also that these items deal strictly with the offerings of broadcasting agencies. The present situation does not seem to be at all satisfactory. Just how these problems may be solved it is difficult to say. It seems likely that some of the present lines of development may have to be modified.

The greatest disadvantage at present seems to be the lack of educational broadcasts. Though the development has been rapid, yet there are still very few broadcasts planned especially for schools. Most of the present broadcasts are only a half hour or forty-five minutes in length, and they occur usually but once each school day. Some are presented only once or twice each week. In time, however, it may be expected that the number of educational programs available will increase.

The second disadvantage appears to be of a more serious nature. Because of physical limitations inherent in the situation, there is little but a change in procedure that can be effective. Remedies applied to present methods cannot work. In the first place, there is no uniformity in the schedules of various schools. Little uniformity can be expected except perhaps in limited areas. In the second place the differences in time are a handicap to broadcasting over large areas.

Here an element of longitude and time enters in. If a program is being offered in Chicago at 9:30, it will be 10:30 by eastern standard time and 8:30 by mountain time and 7:30 by Pacific Coast time; hence, if a national broadcasting system

were to reach all of the schools of the country, it would have to concentrate its time near the middle of the day with the hope that the eastern and western schools would arrange their programs so as to synchronize with the broadcaster's program. I believe that programs will have to be worked out for areas smaller than the nation, limited within a time belt, limited eventually to states, although I do not have conclusive evidence to support such a belief.¹

The third disadvantage is of a similar nature. The programs are not timed so that they come when the subject involved is being discussed in the classroom. Teachers often agree that the radio programs would be very valuable if they would come a few months earlier or a few months later in the year. In regard to these last two problems, the Vice-president of the National Broadcasting Company said:

Our present educational structure and our present radio structure present many difficulties in the path of education by radio. Courses in our schools are neither uniform nor synchronized. Educators in general are strongly opposed to moves toward national uniformity in the schools. They believe that the work of instruction should be considered as a local matter and that schools must be conducted to meet local conditions....

Apparently the best method of teaching by radio would contemplate several broadcasts by local stations attuned to and timed with the local curricula, plus network broadcasts of more general interest, which could be readily fitted into a large number of schedules.²

The handicap of insufficient advance information is not of such a serious character. Recently the most outstanding broadcasts have been announced through bulletins and teachers' manuals that have been sent to schools upon request. It can

¹W. W. Charters, "Radio in Elementary and Secondary Schools," Education on the Air, First Yearbook of the Institute for Education by Radio, Columbus, Ohio: Ohio State University, 1930, pp. 129.

²John W. Elwood, op. cit., p. 15-16.

be expected that further needs in this direction will gradually be supplied.

The lack of radio technique may act as a hindrance until the art of school broadcasting has been further developed. The lecture method has been used over the radio. It has been claimed that the discussion method may be used with some success. The need of an effective technique of presentation over the radio is one that future investigators must supply.

As mentioned in the preceding chapter, the absence of the speaker is claimed by some to be an advantage of the radio. Yet there are values that are lost if the speaker is not present. Dr. W. W. Charters in discussing radio in the elementary schools made the following statement in regard to these last two disadvantages:

Teachers and investigators do not consider the lecture method a good vehicle for instruction in the elementary school. The radio suffers not only because an expository method is used, but also because the speaker is not present, which is a serious handicap in many cases. For, although the mannerisms of the lecturer sometimes detract from the lecture, still we all know that, if we are sitting in an audience where we cannot see the lecturer, it is much more difficult to concentrate attention upon what he is saying. This is essentially the situation after the radio has passed the novel stage.³

Whether or not the radio will admit cheap entertainment to the schoolroom seems to depend on how the equipment is used. If the control apparatus is located in the principal's office and is operated only under his direction, this danger can be

³W. W. Charters, op. cit., p. 130.

eliminated. If, however, the students are allowed to use the apparatus at will, this with other disadvantages will be present.

The handicap of faulty equipment may be expected to disappear with time. Many of the noises formerly called static are not present with the modern radio receiver. The range of radio receivers has been greatly increased, and the daylight hours, which formerly were worth little for broadcasting, are now sold to advertisers for sums running up to hundreds of dollars per hour. The improvement of equipment will likely continue whether education by radio succeeds or not.

The fact that only four principals out of fifty-eight thought that the radio encouraged teacher laziness is an evidence that this factor is not one of importance. The newness of radio education and the resulting lack of understanding of proper ways to use it may account for this reaction from these four principals. Unless the teacher understands how to effectively use radio programs in connection with her class work, much of the value of radio education is lost.

Conservative prejudice in the community and hesitancy because of expense go hand in hand. There is always a certain amount of inertia on the part of the public that must be overcome in the advancement of any new venture. How to overcome this inertia is one of the problems that must be solved if progress in radio education is to be made. It is likely that this factor is of much more importance than this questionnaire

study indicates. That the replies have come from areas where the influence of this factor is at a minimum is indicated by the fact that in all the places represented centralized-radio systems have been installed. An investigation of places where radio systems have not been installed might reveal a different situation.

These have been omitted from this chapter. Also this discussion is not concerned with broadcasts that are not specifically intended for school reception. The attempt has been made to consider as far as possible the more outstanding school broadcasts that were presented during the past school year or that will be presented in the near future.

The Damrosch Concerts in Radio Broadcasting.—The first broadcast of a national character for schools was begun in October, 1928 under the sponsorship of the Radio Corporation of America. It was announced that Dr. Walter Damrosch, known throughout the world as the director of the New York Symphony Orchestra, would broadcast a series of concerts, with talks on music appreciation for the schools of the country. The experiment was launched over the National Broadcasting Company and associated stations. At the end of the first school year the estimated audience of the Damrosch Concerts numbered from two to five million. In September, 1929, the National Broadcasting Company announced that the broadcasts would be continued during the seasons of 1929-30, 1930-31, and 1931-32 under its own sponsorship.

The Damrosch broadcasts appear to be more generally known

CHAPTER IX

PRESENT EDUCATIONAL BROADCASTS

In this chapter a brief description of the recent outstanding broadcasts for school reception has been attempted. Several school broadcasts have been discontinued for various reasons. These have been omitted from this chapter. Also this discussion is not concerned with broadcasts that are not specifically intended for school reception. The attempt has been made to consider as many as possible of the more outstanding school broadcasts that were presented during the past school year or that will be presented in the near future.

The Damrosch Course in Music Appreciation.- The first broadcast of a national character for schools was begun in October, 1928 under the sponsorship of the Radio Corporation of America. It was announced that Dr. Walter Damrosch, known throughout the world as the director of the New York Symphony Orchestra, would broadcast a series of concerts, with talks on music appreciation for the schools of the country. The experiment was launched over the National Broadcasting Company and associated stations. At the end of the first school year the estimated audience of the Damrosch Concerts numbered from two to five million. In September, 1929, the National Broadcasting Company announced that the broadcasts would be continued during the seasons of 1929-30, 1930-31, and 1931-32 under its own sponsorship.

The Damrosch broadcast appears to be more generally known

than any other school program. As a pioneering effort it has demonstrated the practicability of broadcasting school programs on a national basis in America. The concerts have been divided into several series, each series suited to a different grade level. Doctor Damrosch has estimated that from eight to ten millions of students have listened to his broadcasts during the last season. Dr. William C. Bagley of Teachers College, Columbia University, recently made the following statement in regard to these broadcasts: "It is impossible to estimate the influence that these programs have beyond doubt exerted in advancing the standards of musical appreciation in the coming generation."¹

The following announcement was made recently by the National Broadcasting Company:

The broadcasts of the National Broadcasting Company's Music Appreciation Hour, under the direction of Walter Damrosch, will be resumed on Friday morning, October 9, 1931, at 11:00 o'clock, Eastern Standard Time.

The American School of the Air, - The other national broadcast is the American School of the Air. The initial broadcast of this school was presented on February 4, 1930. Until the end of the year programs were broadcast twice each week. A net-work of fifty stations carried these broadcasts. At the close of the programs in May a letter was sent to the state superintendents of schools and commissioners of education ask-

¹William C. Bagley, "The School of the Air," Education by Radio, Bulletin of the National Committee on Education by Radio, 1 (April 30, 1931), 45-46.

ing whether, in their judgment, the programs should be continued for another year. Eighty percent of these officials replied and each of these urged a continuance.

The second series of the American School of the Air commenced on October 20, 1930. Half-hour broadcasts were presented on each school day. The series was continued until May 8, 1931. During the last half of the year the programs were distributed over a net-work of fifty-five stations. A summary of the schedule as given in a recent report by Mr. Frederick A. Willis, Educational Director of the Columbia Broadcasting System, includes history dramatizations for the junior and senior high schools on Monday, story-telling and music appreciation for the elementary grades on alternate Tuesdays, dramatizations of English and American literature for the junior and senior high schools on alternate Wednesdays, music appreciation for the upper grades on Thursday, and a split period of current events and vocational guidance for the junior and senior high schools on Friday.

The programs are passed upon by an Advisory Faculty of thirty-two members, each of whom is a recognized authority in his field. Each item is also scrutinized by a highly trained teacher of English who has had long experience in the elementary and secondary schools. A large advisory Committee, representing educational interests all over the country, assists in the promotion of the broadcasts. Dr. William C. Bagley, Professor of Education at Teachers College, Columbia University, is Dean of the American School of the Air.

An illustrated teachers' manual and classroom guide of sixty-four pages has been published for those teachers who desire it. The manual provides an outline of each broadcast, gives suggestions for project and problem work suited to the various grade levels, and includes carefully prepared bibliographies.

The American School of the Air was originally sponsored jointly by the Columbia Broadcasting System and the Grigsby-Grunow Company, manufacturers of radio receivers, but has recently been financed by the Columbia Broadcasting System alone at a cost of approximately a half-million dollars a year. The public school audience has been estimated to be from five to eight million students.

The Ohio School of the Air.- The most successful and best organized effort to provide instruction for the public schools has been that of the Ohio School of the Air. This broadcast may also be considered as of almost national character for it reaches to some extent more than half the states in the Union. It began as a cooperative venture made possible by Ohio educators, the Payne Fund, the Crosley radio station WLW, the Ohio State University Station WEAO, and many public spirited citizens. The first program was broadcast on January 7, 1929. By April the reports received from public schools indicated that more than one hundred thousand pupils in twenty-two States were listening regularly to its programs.

The Ohio State Legislature watched the programs with interest, and within four months of the opening program it

appropriated forty thousand dollars to pay the expenses of the School of the Air for two more years. This appropriation was made without a dissenting voice. Thus the Ohio School of the Air has gained added significance as the first educational broadcasting attempt to receive the support of a state legislature.

The programs of the Ohio School of the Air have been broadcast every school day from 2:00 until 3:00 o'clock P.M., Eastern Standard Time, over station WLW at Cincinnati. The curriculum during the past season included sixteen subjects. Literature, botany, physics, chemistry, health talks, citizenship, art appreciation, current events, history, aviation, drama, geography, poetry, music appreciation, vocational guidance, government, adventure, general science, and nature study are some of the subjects that have been presented over the School of the Air. Realistic broadcasts were made available to the listening students when such events as the discussions in the State Senate and House of Representatives of Ohio and the inaugurations of the Governor of Ohio and of President Hoover were broadcast as School of the Air programs.

The Standard School Broadcast.- A well known effort to assist the school in the teaching of music appreciation is that of the Standard Oil Company of California by means of the Standard School Broadcast. This series has now completed its third year, having been started in the fall of 1928. The programs have been presented during the past year on Thursday mornings. From 11:00 to 11:20 a program for the elementary

students was broadcast. This was followed from 11:25 to 11:45 by another program for advanced students. Approximately eight hundred schools in California, Oregon, and Washington listened to the broadcast regularly during the past season.

The Standard School Broadcast programs during the past year were divided into three terms: the Christmas term, September 11 to January 1; the Easter Term, January 8 to April 9; and the Midsummer term, April 16 to May 28. Each term was divided into periods: History of Music, Theory of Music, and Musical Characterization. Because of the shortness of time, Theory of Music was omitted from the third term. The various periods covered in general the following subjects: History of Music included general and biographical history; Theory of Music covered instrumentation and music structure, including scales, melody-making, harmony, counterpoint, form and musical rhetoric; Musical Characterization covered pure music such as folk dances, and descriptive music.

In an attempt to bring the work more into relationship with the schools an Advisory Board was organized at the beginning of the past year. This Board was composed of outstanding musical educators of the Pacific Coast and was to assist in the preparation and presentation of the programs. By the beginning of the second series in January, 1931, the Board had grown to fifty members, making it representative of every district on the Pacific Coast.

Another aid developed for use during the past year was a Teachers' Manual, designed to assist teachers in class pre-

paration for the broadcasts. Lectures covering the broadcast material also were printed. During the past year a questionnaire to be used with the class by the teacher has been included with each lecture.

The Standard School broadcast has been presented over a chain of six stations. These are as follows: KFI, Los Angeles; KPO, San Francisco; KOMO, Seattle; KGO, Oakland; KGW, Portland, and KHQ, Spokane.

The WRUF Music Appreciation Broadcast.- Recently Music Appreciation was added to the curricula of the public schools of Florida. The problem then arose as to how this subject should be presented. To provide music teachers for all the schools would be a tremendous expense, and would be impossible in the case of the rural schools. Furthermore a phonograph and a large library of recordings would be necessary for each school.

The state radio station, WRUF, operated by the University of Florida, stepped in and solved the difficulty. In cooperation with the State Department of Public Instruction, a program of music appreciation was planned and broadcast over WRUF. The programs have been presented daily from 9:00 to 9:50 o'clock. Phonograph records are used as the source of music. Students numbering not less than seven thousand in thirty-five cities have listened regularly to the broadcasts.

The WMAQ Public School Broadcasts.- One of the most extensive school broadcasts is that presented by the Chicago Daily News over its station WMAQ. These programs have been

carried on for several years. To insure that the programs would be truly educational, the entire matter of program making and the selection of the radio teachers was given over to the educational staff of the Chicago Public Schools, under Superintendent Wm. J. Bogan and Assistant Superintendent Rose A. Pesta. The Radio Committee of the Board of Education worked out the details of the programs. The subjects were presented by teachers in the Chicago schools.

The broadcasts during the past year took place each school day morning. They were divided into two periods: one from 9:10 to 9:30 and one from 9:55 to 10:15. The subject matter was arranged to cover the entire span of grades one to nine. A schedule of the broadcasts was printed each month. This gave a brief outline of each program and offered suggestions to the teacher for the better use of the material presented. The fact that about thirty-five hundred of these schedules were distributed each month indicates the extent to which the broadcasts have been used.

A brief study of the programs outlined for the month of May, 1931, gives one some notion of the work taken up. In general a specific subject was presented on a given day throughout the month. The outline in brief with the titles of a few of the programs was arranged as follows:

Monday - Music Appreciation

Old Friends

Music of Hawaii and the Phillipines

Music of the American Indian

Rhythm Recognition

American Composed Music

The Story of Mozart

Tuesday - Geography

Flying North

Dog Team and Airplane

Peeps at Africa

Life in the Rugged Coastal Regions

The Geography of the Vegetation of North America

Wednesday - Science

Magnets and Magnetism

Nature of Electricity - Conductors and Nonconductors

Electric Cells and Batteries

Thursday - Literature

Arabian Literature brings wonder tales of success
through magic

Russian Literature brings a thought of life's
tragedies

Friday - History

The Civilization of the Romans

Theodore Roosevelt

Memorial Day

In addition to these programs the work of this month included also lessons on mathematics, character education, health, poetry, books, art, and current events.

The North Carolina Radio School.- From February 23 to May 7 of this year the State Department of Public Instruction

of North Carolina conducted a twelve weeks experiment in educational broadcasting known as the North Carolina Radio School. The purpose of the Radio School was to present for the students who listened to the broadcasts an educational program which would meet their special needs and interests and which would enrich and supplement their regular classroom instruction. The general outline for the radio course was as follows:

I. Citizenship. Monday

11:30 to 11:40 Current Events

11:40 to 11:50 Recreatory Reading

11:50 to 12:00 Character Training

II. Science. Tuesday

11:30 to 11:45 Studies in Science

11:45 to 12:00 Health and Physical Education

III. Social Studies. Wednesday

11:30 to 11:45 Geography and Travel

11:45 to 12:00 History and Social Development

IV. Art, Music and Literature. Thursday

11:30 to 11:45 Fine Arts. Music Appreciation

11:45 to 12:00 Literature. Industrial Arts

The programs were broadcast through the courtesy of Station WPTF at Raleigh. On the whole the experiment produced very satisfactory results. Those in charge were convinced that it is both possible and practical to supplement the regular school work through the use of the radio.

The Rochester Symphony Broadcasts.- Through the courtesy

of Mr. Arthur M. See, Manager of the Rochester Civic Music Association, the following information was sent to the writer. In the fall of 1929 the Rochester Civic Orchestra was organized. A series of broadcasts for the schools was then begun. Mr. George Eastman donated receiving sets and power speakers for the schools. These were built by the Stromberg-Carlson Telephone Manufacturing Company. Thirty-seven schools were equipped with complete installations. The series of broadcasts then began over the Stromberg-Carlson station, WHAM. The programs are given each Tuesday at 2:00 P.M. Eastern Standard Time, and are repeated at 3:15 for schools which could not accomodate all students in their assembly halls at one time. The programs originate at different school buildings, the orchestra going from one building to another each week.

Station WHAM has a range of two or three hundred miles. It is believed that many schools outside of the city of Rochester may listen regularly to these broadcasts.

CHAPTER X

THE OUTLOOK FOR THE FUTURE

What does the future hold for educational broadcasting? The reader has probably formed his own conclusions as he has read this account. The writer has formed his. Yet to base one's conclusions upon the brief material presented here is hardly a scientific procedure. We can best form our opinions with the aid of those who are experts in the field. This chapter, therefore, is largely a reproduction of the expressions of those who are qualified to make predictions. The lack of an outline is necessitated by the fact that the opinions of the authorities consulted are of most value if we can get their reaction to each of the several aspects of the situation. Thus, if several phases of the subject are mentioned by each of those consulted, it is obvious that the reader will find the discussion of any one aspect scattered throughout the chapter.

The discussion may well be opened by some representatives of the commercial broadcasters. Mr. Frederic A. Willis, Educational Director for the Columbia Broadcasting System, made the following statement in a recent report of the activities of his company, a copy of which he mailed the writer:

There seems little room for doubt that the future will see an ever increasing use of the radio in the classroom for purposes of formal instruction...

Unquestionably, the radio is granted a definite and

important place in the educational field by the vast majority of school men. As general conditions improve and more schools are equipped, there will be an ever increasing demand for programs suitable for school use.

Mr. John W. Elwood, Vice-President of the National Broadcasting Company, said not long ago,

Radio is undoubtedly destined to become an integral part of this nation's educational system. It is inevitable that an agency of such exceptional breadth should be utilized in increasing the cultural levels of our youth as well as our adult population.

To what extent radio will supplement the work of individual instructors, what subjects will be most effectively adapted, how they will be presented and by whom, are at present matters of conjecture. The meteoric progress of radio broadcasting in the past, as an art and as an engineering accomplishment, is perhaps indicative of the rapid development of the future. If the next ten years produce as many modern miracles as have the past ten, any prediction made now would appear ridiculous in the near future....

The careful, persistent, never ending work in the schoolroom will continue to be the task of the school teacher, but radio can supply the highlights which will make that work much less of drudgery and more of inspiration....

There are no signposts to guide our steps, but we shall go on and on, certain that radio can bring inspiration, culture, stimulation, into the schoolroom. We know that it can and will be made a tremendous asset in the cause of education....¹

Another representative of the broadcasting companies is Alice Keith, Broadcasting Director of the American School of the Air. She says,

Five years ago, receiving sets were not good enough to receive the spoken word clearly; music alone could be presented successfully. Perhaps each school in the country will have a radio within the next five years just as it now has a blackboard. Doubtless, a far greater perfection in classroom technique will have been developed, and a wider range of

¹John W. Elwood, op. cit., pp. 5-8.

programs will be presented nationally as well as locally.²

Dr. W. W. Charter, Director of Educational Research, Ohio State University, is one of the veterans as well as one of the authorities in the field of education by radio. His comment has perhaps been tempered by the wisdom of experience:

We should not, however, place too much reliance upon the enthusiasm thus engendered. We must rather look to the future when conditions will have changed. Shortly we shall find that the teacher and the children have become accustomed to this instrument; the novelty has worn off. Then comes vigorous competition between radio material and the other material of the classroom. The teacher's program is crowded. The children have enough to do under ordinary circumstances to keep them as busy as the teacher may demand. As long as radio is a novelty the teacher is willing to take time off to listen to it. When it ceases to be a novelty the instructor will begin to consider the relative merits of a radio program and the regular instructional material. If, at this time, the teacher feels that the radio material enriches the course or performs other functions that she may not perform so well, she will turn on the dial. If it does not fit in, being a matter of mere amusement rather than learning, the teacher will cease to use the broadcasting instrument, and for all practical purposes radio will disappear from education in such schoolrooms.³

Dr. William G. Bagley, Dean of the American School of the Air, comments upon the prospects for the future as follows:

It is, of course, quite obvious that the radio is at best a supplement or aid to the work of the schools. Education, particularly in the early years, is essentially a give-and-take process to which the actual face-to-face contact of teacher and learner is a sine qua non. The response of the learner is a basic element in the art of learning and it is only when teacher and learner are working and thinking together that this condition is fulfilled. Direct oral instruction may be given over the radio, but to be maximally

²Alice Keith, "Broadcasting Educational Programs Over a National Network," Education on the Air, First Yearbook of the Institute for Education by Radio, Columbus, Ohio: Ohio State University, 1930, pp. 228.

³W. W. Charters, op. cit., pp. 128.

effective with children the classroom teacher must be on hand to direct the learning activities that the instruction suggests and to make certain through observing and questioning the pupils that the instruction has actually been assimilated.⁴

The opinion of Mr. Armstrong Perry, who has done as much individual research in the field of radio education as anyone, should be included here. The following statement is taken from Mr. Perry's report to the National Advisory Committee on Education by Radio:

There appears to be no prospect of immediate change in the relation of school broadcasting to school programs or to school instruction. The vision of a school taught entirely by means of radio is of journalistic and not of educational origin. The use of radio is increasing in schools. Television, which it is announced will be on a practical basis within a year or two, suggests possibilities not yet reached even by the talking motion pictures. But educators continue to regard radio as a supplementary agency which will be used when it can provide, for a short period, instruction or inspiration of an order not otherwise available in most classrooms.⁵

This chapter may well close with the comment of Dr. Ray Lyman Wilbur, Secretary of the Interior. Dr. Wilbur says,

There is no likelihood of replacing adequately the personal relationship of teacher and student. The pupil can ask questions and receive answers back. The give and take between the broadcaster and the listener is one-sided. The subtle reactions of an audience upon the speaker are absent...

On the whole, the progress of radio broadcasting in America has been such as to warrant confidence in its future. We have never failed in our country when we called upon the

⁴William C. Bagley, "What the Future Holds for Broadcasting Into the Schools," School and Society, XXXIII (May 30, 1931), 713.

⁵Armstrong Perry, "Report of Armstrong Perry to the Advisory Committee on Education by Radio," Report of the Advisory Committee on Education by Radio, Appointed by the Secretary of the Interior, Washington, D. C.: Advisory Committee on Education by Radio, United States Department of the Interior, 1930, pp. 62-63.

sense of public service of the leaders in our various fields of activities. Broadcasting is closely associated with public service. Those in charge of it will inevitably feel the need of giving real help to our people. This will weigh with them as a public responsibility just as heavily as will the financial side.⁶

⁶Ray Lyman Wilbur, "The Radio in our Republic," School and Society, XXXIII (May 30, 1930), 711-13.

Chapter. This list has been compiled from many sources. The most important single source was an outline of research problems that has been prepared by Dr. J. H. Clapp of Ohio State University for the guidance of investigators.

The reader will notice that there is a great deal of overlapping among these problems. He will also notice that there is much variation in the range and scope that the various problems cover. For the sake of convenience, a rough classification has been worked out. There is considerable overlapping between these groups as well as between the individual problems. The use of the title in selection is so not and definitely established policies the same that the major problems in the field are present to a greater or less extent in all parts of the field.

Problems related to broadcasting.

Problems of administrative organization.

1. Studying the internal organization of the station.
2. Studying the laws and regulations governing broadcasting.
3. Investigating the relations of commercial and educational stations.

CHAPTER XI

PROBLEMS FOR FURTHER RESEARCH

For the benefit of those who have become interested in the great field of education by radio and wish to investigate its problems, a list of research problems is given in this chapter. This list has been compiled from many sources. The most important single source was an outline of research problems that has been prepared by Dr. W. W. Charters of Ohio State University for the guidance of investigators.

The reader will notice that there is a great deal of overlapping among these problems. He will also notice that there is much variation in the range and scope that the various problems cover. For the sake of convenience, a rough classification has been worked out. There is some overlapping between these groups as well as between the individual problems. The use of the radio in education is so new and definitely-established policies are rare that the major problems in the field are present to a greater or less extent in all parts of the field.

Problems Related to Broadcasting

Problems of Administration and organization.-

1. Studying the internal organization of the station
2. Studying the laws and regulations governing broadcasting
3. Investigating the relations of commercial and educational stations

4. Studying the relations of college stations to each other
5. Studying the limitations, contributions, and inter-relations of chain and local broadcasting efforts
6. Determining whether state- or privately-owned stations should be used for broadcasting educational programs
7. Developing criteria by which an educational institution may determine whether or not it shall broadcast
8. Determining whether college stations should broadcast commercial programs
9. Studying administrative problems in the founding of a radio school
10. Determining the objectives of a radio school
11. Setting up criteria for judging good administration of the station
12. Surveying stations to evaluate their efficiency
13. Investigating educational broadcasting finance
14. Developing a plan for financing and administering broadcasts which extend beyond the boundaries of a well established political division
15. Finding the cost of broadcasting compared with other methods of instruction

Problems related to broadcasting talent.-

1. Studying the kind of broadcasting talent needed and available
2. Discovering the requirements in voice, composition, etc. for good teaching over the radio
3. Securing and training suitable talent for presenting programs
4. Interesting educators in assisting with programs
5. Setting up criteria for the selection of good broadcasters

6. Judging the efficiency of broadcasters
7. Diagnosing the weaknesses of broadcasters and providing training
8. Eliminating personal mannerisms from speech
9. Eliminating inefficient broadcasters
10. Providing broadcasters at the scheduled time

Problems related to the constitution of programs.-

1. Selecting and preparing materials to be broadcast
2. Determining what material should be used in educational radio programs
3. Determining the proper proportions of informational and aesthetic material
4. Determining what percentage of time can well be occupied by entertainment and education on a commercial program
5. Determining the effectiveness of radio instruction when it is formal in character
6. Determining the ideal length for a radio lecture
7. Preparing programs for special occasions

Problems related to the presentation of programs.-

1. Setting up criteria for a good presentation
2. Diagnosing the weaknesses of a presentation and providing remedies
3. Devising teaching methods to be used in instruction by radio
4. Securing proper teaching conditions in the studio
5. Determining the most favorable hours to broadcast

Problems Related to the School

1. Setting up criteria for suitable equipment
2. Types of radio equipment available

3. Securing equipment
4. Building equipment by the students
5. Installing radio equipment
6. Overcoming inertia of the public toward a new idea
7. Securing the co-operation of the teacher
8. Setting up criteria for the good use of radio material by the teacher
9. Diagnosing teachers' weaknesses and providing remedies
10. Determining in what grades the radio shall be used
11. Ascertaining whether auditorium or classroom listening is best
12. Determining the most effective size for a listening group
13. Setting up criteria for good learning by radio
14. Setting up proper conditions for learning
15. Training children for radio listening
16. Preparing children for radio instruction
17. Utilizing visual aids in connection with the radio lesson
18. Studying problems of class management introduced by the radio
19. Determining the values of education by radio
20. Investigating the problems of the ungraded school
21. Perfecting tests to be used in checking results.

Problems Related Both to Broadcasting and the School

1. Setting up criteria for good materials for broadcasts
2. Diagnosing weaknesses of materials and providing remedies

3. Selecting visual aids to be used in connection with broadcasts
4. Selecting extra-curricular materials to be presented in school, before and after school, and during vacations
5. Ascertaining what subjects, if any, may be better taught over the radio than in formal school procedure
6. Discovering which subjects may be supplemented by the radio
7. Determining grade placement of materials and grade distribution of programs
8. Fitting radio lessons into school programs
9. Preparing the class in advance
10. Providing for pupil activity and participation
11. Meeting the difficulty of inability to repeat material broadcast
12. Studying proper physical conditions for reception
13. Finding out those courses which may be broadcast most satisfactorily on a local basis, on a state-wide basis, on a national basis, and on a time region basis
14. Finding out how radio programs can be made interesting enough to hold pupil interest
15. Setting up controlled experiments in schools
16. Determining the radio interests of children
17. Studying co-operation between the broadcaster and the classroom teacher

Problems Related to the General Public

1. Studying and evaluating listeners' reactions
2. Determining the tastes, needs and wishes of audiences
3. Determining the effectiveness of radio education as compared with correspondence courses, lectures, newspapers, etc. in reaching the desired audience

4. Determining the effectiveness of radio education as compared with correspondence courses, lectures, newspapers, etc. in securing the desired results
5. Setting up criteria for good learning by adults
6. Supplementing radio lessons
7. Organizing groups interested in education by radio
8. Investigating the possibilities of group discussions as a supplement to radio lessons
9. Giving college credit for radio courses

Problems Related to the Investigator in Radio Education

1. Developing techniques of investigation in radio education
2. Studying the techniques that have been used in investigating radio education
3. Securing information from audiences by correspondence, questionnaires, and interviews

Problems of a General Nature

1. Determining the effectiveness of radio education
2. Studying the limitations of radio education
3. Setting up criteria for judging the effectiveness of radio education
4. Determining the relation of recreation to education in radio education programs
5. Applying the laws of learning to radio education
6. Studying the psychology and physiological psychology of hearing in relation to learning over the radio to determine the span of attention, the proper length of lessons, the optimum time of day for lessons, the retention of material learned over the radio, and the like
7. Investigating the relative effectiveness of hearing, sight and a combination of the two as channels for learning, to throw light upon the relative values of

of radio, silent movies, talkies and television for learning

8. Investigating the history of the significant phases of radio education
9. Investigating the history of education by radio in definite localities
10. Investigating the objective policies and practices of foreign countries in connection with the significant problems of American broadcasting
11. Studying the problems of uncensorable channels for education by radio

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APPENDIX A

The following letter and questionnaire were sent to principals of schools equipped with centralized-radio systems:

The Municipal
UNIVERSITY OF WICHITA
Wichita, Kansas

Dear Sir:

Through your own experience with the radio as an aid to education, you are aware not only of the great possibilities of this new development, but also of the disadvantages and limitations that have shown themselves thus far. You also realize the imperative need of continued investigation and experimentation in this field if worth while results are to be accomplished.

In an effort to determine the present status of the radio in education and especially to find out what problems are now demanding solution, we are asking a selected group of individuals who have had an opportunity to become familiar with the situation through actual use of centralized-radio systems in school buildings to give us their judgments by filling out the enclosed questionnaire.

We shall greatly appreciate your help in our attempt to make this contribution to the cause of education.

Sincerely yours,
M. H. Ahrendt

USE OF CENTRALIZED RADIO SYSTEMS
IN PUBLIC SCHOOLS

1. Name of school _____
2. Location of school _____
3. How long have you had your centralized-radio system? _____
4. What was the approximate cost of your equipment? _____
5. Rooms equipped with loud-speakers: Number of class-rooms _____
_____ Auditorium _____ Gymnasium _____ Cafeteria _____
List other rooms _____
6. Is your playground equipped with speakers? _____
7. What percentage of the material distributed over your system is obtained by reproducing phonograph records? _____
8. The following list contains purposes for which centralized-radio systems have been used. Add below any other uses not listed here which you have made of your equipment. Then, by placing numbers in the parentheses, rank in order of importance the three uses which have been most significant in your school. Indicate other uses by placing check marks in the parentheses.
 Directing physical-education classes.
 Receiving lectures on vocational guidance.
 Receiving lectures giving counsel to students concerning college entrance.
 Directing playground activities.
 Directing fire drills.
 Making announcements to all or part of school.
 Instruction. List subjects _____

 Amplifying talks, music, etc. on assembly programs.
 Receiving broadcasts for assembly programs.
 Marches or music for assembly or dismissal.
 Music in cafeteria at noon.
 Music for entertainment or dancing at school social affairs.
 Music for school plays.
 Enable visitors at school to greet pupils without calling an assembly.

- () Programs for parent-teacher-association meetings.
- () _____
- () _____
- () _____

9. The following list contains advantages which have been claimed for the use of centralized-radio equipment. Add below any other advantages not listed here. Then rank in order of importance the three which have been most significant in your school. Indicate other advantages by check marks.

- () Convenience - in making announcements, saving time, etc.
- () Supplements the teacher's efforts with those of experts in the subject presented.
- () Added interest and variety helps vitalize instruction.
- () Enriches the curriculum.
- () Results in increased voluntary research and study.
- () Radio lessons are valuable demonstrations for the teacher.
- () Enables the teacher to study her class better than when she is doing the actual teaching.
- () Relieves the teacher from the strain of continual teaching.
- () Supplies personality and authenticity not felt in textbooks.
- () Partially takes the place of the auditorium.
- () Cultural value of some programs.
- () Inspiration of hearing great national leaders.
- () Broadens pupils' horizons.
- () Gives parents the opportunity to know what is being taught.
- () Saves expense of employing orchestras for social affairs.

- () _____
- () _____
- () _____

10. The following list contains disadvantages connected with the use of centralized-radio equipment. Add below any disadvantages not listed here. Then rank in order of importance the three which have been significant in your school. Indicate other disadvantages by check marks.

- () Not enough educational programs available.

- () Programs not properly correlated with the curriculum.
- () Difficult to fit programs into the school schedule.
- () Insufficient advance information.
- () Absence of speaker detracts from the interest.
- () Lack of an effective teaching technique over the radio.
- () Encourages teacher laziness.
- () Admits jazz and cheap entertainment to the schoolroom.
- () Conservative prejudice in the community.
- () Too expensive.
- () Faulty equipment.

- () _____
- () _____
- () _____

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