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## Application of Radio Techniques In The Classroom In The Secondary Schools

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APPLICATION OF RADIO TECHNIQUES IN THE CLASSROOMS  
IN THE SECONDARY SCHOOLS

being

A thesis presented to the Graduate Faculty  
of the Fort Hays Kansas State College in  
partial fulfillment of the requirements for  
the Degree of Master of Science

by

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## CHAPTER I

INTRODUCTION TO THE APPLICATION OF  
RADIO TECHNIQUES IN THE CLASSROOMS  
IN THE SECONDARY SCHOOLS

The rapid pace of technical development in our country has an impact upon all our activities. In no field has there been a more rapid development than in the means of communication, particularly in radio. Radio has only been with us a generation and it has far from reached the limits of its exploitation. One field in which the application of radio has just begun is the field of education.

Radio in education has immense possibilities. It can bring the classroom closer to the rest of the world than it has ever been before. It can break down the four walls and bring to the student the personal experience of listening to the great men of our times; of hearing classical music played by the best orchestras; of hearing on-the-spot descriptions of history-making events; of receiving information of special subjects by experts; and of visiting through radio the remotest spots on our earth.

Radio can be used as a motivation factor in awakening students to the importance of studying certain required subjects. It can be used as a supplementary teaching aid in many subjects. A teacher may have direct teaching by radio in such fields as adult education. Radio can be a boon to handicapped children who are unable to attend school regularly. Radio in education has only the limits of human ingenuity.

## The Problem

It is the purpose of this thesis to give the types and sources of radio educational programs and to point out the methods and techniques of adapting these programs to the classroom situation, and also to show the equipment necessary in this application and how this equipment may be used. It is also the purpose of this research not only to show how radio sources have been used in the classroom, but also to point out other desirable uses. The Application of Radio Techniques in the Classrooms in the Secondary Schools brings into focus the impact of radio upon education will: (1) attempt to present in an organized manner the varying aspects of radio in education and, to show the relation of these aspects of radio to the classroom use; (2) show the practicability of radio in education; (3) show the problems in education that may be solved through the application of radio; and (4) will demonstrate the promising future that radio has in the field of education.

## Limitations

This thesis is limited to the aspects of education by radio that have a bearing upon the classroom situation. The thesis should be servicable to teachers and administrators of our schools. Furthermore, it is to show methods and techniques involved in adapting radio to the classroom. It is intended to be practical rather than theoretical. The data used is post war material from primary sources. In general, effort will be made to show post war

developments in education by radio and the bearing such has upon the school's use of radio.

#### Method Used in Investigation

The method for the most part is clearly the survey type. The material for this thesis consists mainly of four types: (1) material made available from the seventy-eight standard and FM educational radio broadcast stations; (2) material available from each of the state superintendents of public instruction; (3) material available from the Office of Education, United States Department of the Interior; and material from The Journal of the Association for Education by Radio. This was carefully examined, organized, and constitutes the body of the thesis.

#### Related Research

The following related research deals with topics closely related to the subject matter of this thesis. While there is an abundance of research material available on most educational fields, there is very little available in the field of educational use of radio broadcasting.

Eleanor P. Bartlett has written a thesis at Boston University entitled "Radio - - It's Technique in the Elementary Classroom"<sup>1</sup>

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1. Eleanor P. Bartlett, "Radio - - It's Technique in the Elementary Classroom" (Unpublished Master's Thesis, Boston University).

This thesis evaluates the program "The American School of the Air." Seymour Bernhard wrote for his doctor's dissertation at New York University, "Radio: A Textbook for High School."<sup>2</sup> This dissertation presents a survey of broadcasting and discusses radio production and writing. Lola C. Updyke has written for George Washington University, "An Evaluation of Radio Broadcasts for Junior High Schools in the District of Columbia."<sup>3</sup> This study evaluates the 1941-42 broadcast series, "The Other American," with particular reference to the broadcast on Canada.

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2. Seymour Bernhard, "Radio: A Textbook for High School" (Unpublished Doctor's dissertation, New York University.)

3. Lola C. Updyke, "An Evaluation of Radio Broadcasts for Junior High Schools in the District of Columbia" (Unpublished Master's thesis, George Washington University, Washington, D. C.)



## CHAPTER II

## PROGRAMS AND EQUIPMENT

## Systems of Broadcasting

There are three general types of educational systems of broadcasting: university and college broadcasting, public school systems of broadcasting, and state-wide systems of broadcasting. Of the three systems the broadcasting programs of the university or college is probably least coordinated to the individual school systems. The state-wide system of broadcasting probably has some type of coordinating facilities with the various school systems, but the city public school system of broadcasting is most likely the best coordinated to the school classroom. In most cases, the city educational broadcasting system is a branch of the public educational system of that city. As such, it is able to control both the broadcast schedule and the school room situation, thus eliminating many sources of conflicts and friction.

The utilization of university educational radio programs depends on several factors, as: the distance of the classroom to the broadcasting station, the power of the station, the type of station - - AM or FM, the type of programs presented, and the specialty of the college or university; for example, an agricultural college, or a fine arts college, an engineering college, or a mechanical arts college. All these factors would have a bearing

upon the types of programs presented and hence would effect the use to which they were put in the classroom.

Radio station KSAC,<sup>4</sup> Kansas State College, for example, specializes in farm programs, 4-H programs, health programs, and home economics. The programs of WBAA, Purdue University, include music appreciation, public issues, agriculture, mathematics, conservation, history, and biology. WNAD, University of Oklahoma, presents programs concerning history, literature, art, religion, science, music, and current events. WOI, Iowa State College, has programs on home economics, books, and international problems. WEW, St Louis University, has programs on music, science, geography, and government.

For the best coordination of radio programs of universities to a given subject, the teacher should have available all the program schedules of the stations that can be heard at that location. Out of these schedules of available programs, the teacher can select those that are appropriate to the subject taught. Most educational stations have a weekly or monthly schedule of programs that they would be glad to send to a teacher on request. It would be even better for the teacher to request to be placed on the regular mailing list.

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4. KSAC is the broadcast station for Kansas State College. WIBW, Topeka, turns their frequency over to KSAC every week day afternoon.

## Suggestions to Teachers

In using the radio in the classroom, the teacher can follow several patterns depending upon the type of program, whether in-school or out-of-school listening, and previous preparation. The following is a list of suggestions that would be desirable in radio listening. These suggestions were made by the Texas Department of Education.

- (1) If possible, have a radio in each room.
- (2) Have radio tuned properly for comfortable listening and have all pupils seated so they can hear well.
- (3) Pre-broadcast and post-broadcast work is desirable. Secure necessary supplementary materials before program begins. Your skill in using the broadcast is just as important as the broadcast itself.
- (4) Required note-taking is generally undesirable; however, assist pupils to follow the directions of the broadcaster.
- (5) Encourage parents to listen at home and discuss programs with the pupils.
- (6) Listening should be a pleasure. Don't spoil it by too much formality and required work. You should, however, prepare the pupils for the broadcast by telling them what the program is and how it is related to previous study and to pupil interests.
- (7) After the broadcast, discussion should arise naturally from the children's interest in the program subject. Encourage them to talk about things they would like to do in connection with further study of the broadcast materials.
- (8) Write your criticisms to the broadcaster. They want to give you good programs.<sup>5</sup>

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5. Texas Department of Education, Teachers' Classroom Guide for Open Your Eyes, (Austin, Texas: The Texas School of the Air, 1948-49.) pp. 9-11.

## Preparation Before the Broadcast

Haphazard listening is as inefficient as haphazard teaching. Some preparation is necessary before a broadcast. The students should be given an introduction to a program. They should be oriented as much as possible on what they are going to hear and what they are expected to get out of it. If the program is part of a series, the students should be shown where this particular program fits into the series. The following gives pointers on preparing for a broadcast.

- (1) This period should be quickly and efficiently accomplished. The main purpose is to put the student in a receptive attitude.
- (2) Make any adjustments that will make listening more pleasant; such as lighting, ventilation, putting away excess papers, books, etc.
- (3) Have all pupils seated so that they can hear clearly. Facing the radio is most natural.
- (4) All supplementary material should be collected and on hand.
- (5) Engage in preparatory activities: read and discuss introductory materials; examine illustrative and explanatory materials. The teacher should be familiar with manual materials and have tentative utilization activities planned.
- (6) Test radio; regulate clarity and loudness in relation to most distant point in room from the radio.
- (7) Sometimes a definite thing to listen for tends to challenge the interest and imagination of the students.<sup>6</sup>

## Listening to the Broadcast

The atmosphere of the room during a broadcast (if it is in-

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6. Loc. Cit.

school listening) is important. Interruptions from any source can be fatal because there is no chance for a repeat. All conditions in the room must tend towards good listening.

- (1) Best results will be secured if there is a radio in each classroom. A natural situation is preferred to auditorium listening.
- (2) The students should be comfortable, relaxed, orderly, and feel free to become absorbed in the program.
- (3) Eliminate as many distractions as possible, within and outside the classroom.
- (4) The teacher should listen as a member of the audience. Her attentive listening is one of the best assurances that the students will listen attentively.
- (5) Required note-taking is generally undesirable. Sometimes it is profitable for the teacher to take a few notes in order to better guide the discussion following the broadcast.

#### Following the Program

Students should be encouraged to ask questions and give reactions to the program. These should be as spontaneous as possible. The teacher must integrate the program in the student's thinking so they can see where it fits into their life situation and into the instructional program. A jumbled group of radio programs without either a connecting link between them or a link between them and the student's actual experiences would be largely wasted effort.

- (1) The purpose of this period is to increase the value of the broadcast by encouraging the students to react to it in terms of their own interests and capabilities.

- (2) The skill of the teacher in using the broadcast is as important as the broadcast itself. The success of this period depends upon the ingenuity of the teacher to bring out the aspects of student experience which makes the broadcast important and significant.
- (3) Most programs stimulate discussion and spontaneous reactions. Neither a question and answer check-up nor a minute review of the broadcast is generally desirable.
- (4) Integration with classroom activities makes the program become more a part of students' experience and thinking.
- (5) The broadcast should act as a "springboard" for many worthwhile follow-up activities that sometimes carry over several days.<sup>8</sup>

All audio visual aids that can be adapted to the radio program should be used, such as maps, charts, specimens, models, films, slides, etc. These will give breadth and depth to the pupils' understanding of the programs.

Effective uses of visual aids with radio is dependent on proper use by a trained teacher who has prepared her class for the radio experience, anticipated for them the information they are about to receive, and challenged their interest and visual or aural powers of concentration, to obtain the accurate knowledge for group discussion following the experience. This preparation and participation make it possible to teach more in a given time, and experience has found the information gained is retained longer than in any other tried teaching procedures.<sup>9</sup>

An example of the activities that can be carried on in connection with a broadcast is as follows. This procedure is in connection with a program on Weather, Texas School of the Air.

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8. Loc. Cit.

9. Ibid., pp. 8-9.

## Weather

In this program the various kinds of precipitation and storms are discussed. The effect of geographical location, bodies of water, and seasonal changes upon local weather conditions is brought out.

Which of the following common beliefs are true: "A cloudy night prevents frost." "A ring around the moon indicates rain." "It often gets too cold to snow."

Things to do:

- (1) Make the following kinds of precipitation artificially in the school room: dew, frost, cloud.
- (2) Test the temperature, air pressure, dew point, and relative humidity of the school room on several consecutive days.
- (3) Devise instruments of your own for measuring wind directions, wind speed, and the amount of rain or snow.
- (4) Read weather maps and predict the weather from them.
- (5) Visit a weather forecasting station.
- (6) Maintain an amateur weather station at school.

Teaching Aids:

- (1) Thermometers
- (2) Barometers
- (3) Improvised wind vanes and rain gauges
- (4) Weather maps

Reading References:

Pathways in Science, Book II, "Out of Doors," Craig, Gerald, and Baldwin, Sara, Ginn and Co., Dallas, 1932, pp. 103-105.

Pathways in Science, Book III, "Our Wide, Wide, World," Craig, Gerald and Baldwin, Sara, Ginn and Co., Dallas, 1932, pp. 257-284.

Pathways in Science, Book IV, "The Earth and Living Things," Craig, Gerald and Hurley, Beatrice, Ginn and Co., Dallas, 1932, pp. 105-119.

Elementary Science by Grades, Book II, Persing, Ellis and Peoples, Elizabeth, D. Appleton-Century Company, Inc., New York, 1928, pp. 124-129, 131-136.

And That's Why, Reed, Maxwell, Harcourt, Brace and Co.,  
1932, pp. 55.

Weather, American Ed. Press, Unit Study Book, No. 551.

Refer to state adopted readers and encyclopedias for further reference materials

Related Fields:

Weather, The, 10 minutes. The circulation of air is shown on the earth's surface, the progress of a wave cyclone is traced with detailed consideration of the warm front and the cold front.

Weather Forecasting, Shows how observations of weather are made, the preparing of a weather map and its importance to certain industries and groups of people who must be forewarned of weather.<sup>10</sup>

Another method of using educational broadcasting would be the assignment of a committee or a single pupil to listen to a given broadcast, to take notes on the broadcast, and then report to the class on the broadcast. This is one way of adopting programs that come at another hour other than the class period.

The use of educational radio programs will in no way supplant the school room teacher. Educational radio is simply another tool in the hands of the teacher which can help her in her work. The use of this new tool will depend upon the training and ability of the teacher.

The classroom teacher has the responsibility of deciding (i) what broadcasts she will have her pupils listen to; (ii) what mechanical aids she will need and how they are to be used; (iii) how the radio lessons are to be fitted into the regular school work; (iv) how to create the proper mental attitudes of the pupils toward the broadcasts; (v) what subject-matter preparation

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10. Ibid., pp. 33-34.



the pupils should make; (vi) what listening conditions should prevail; (vii) what assistance her pupils will need; and (viii) how to merge the program with the curriculum of her school.<sup>11</sup>

The following is a list of suggestions to the classroom teacher as given by the Minnesota School of the Air.

To make the in-school listening situation more enjoyable and profitable the following recommendations are suggested as classroom helps.

- (1) The listening situation should be relaxed and enjoyable.
- (2) The radio speaker should be in front and on the eye-level of the listeners.
- (3) Every broadcast should be followed by an integration period during which the students tie together facts, form generalizations, discuss ideas presented, and plan related work.
- (4) Every broadcast should be preceded by a short warm-up period so that the pupils know why they are listening and for what to listen.
- (5) In-school broadcasts should be knit into the whole curriculum, a single program, perhaps, serving many different subject-matter areas.
- (6) Minnesota School of the Air programs are designed to foster favorable attitudes. The teacher can make a signal contribution by nodding, clarifying and emphasizing the attitudes as broadcast.
- (7) It is hoped that each broadcast will help train listening discrimination. A post-broadcast and class discussion of the merits and demerits of each program will evolve a more critical, appraising listening attitude.
- (8) Program subjects, techniques, and approaches are based on teacher reaction. Comment and criticize by phone, card, or letter to the Minnesota School of the Air, KUOM, Minneapolis 14, Minnesota.<sup>12</sup>

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11. Cline M. Koon, The Art of Teaching by Radio (Office of Education, Bulletin No. 4, Washington D. C.: United States Government Printing Office, 1933), p. 60.

12. The Minnesota School of the Air (Minneapolis, Minnesota: University of Minnesota, LI, No. 42, September 20, 1948), p. 3.

Station KRVM, Eugene, Oregon, has compiled a list of suggestions to be used by teachers and administrators in adapting radio educational programs to the school system.

A Compilation of Suggested Duties For  
Radio Coordinators

- A. A general conception of a committee of Radio Coordinators is: A group of teachers and administrators representing all levels of education, meeting at regular intervals to determine the best utilization of radio in the Eugene Public Schools. All work would be in close correlation with that of the Department of Audio-Visual Aids.
- B. The following points are listed as suggested duties for the group as a whole:
  1. Determine current practices in the use of radio in education.
    - a. Survey literature in the field.
    - b. Survey other school systems using radio extensively, such as Portland, Corvallis, etc.
    - c. Obtain complete, accurate data on programs carried over KRVM and local commercial stations.
  2. Establish policies of evaluation of educational programs.
    - a. Study of programs currently aired over KRVM, KOAC, and local commercial stations.
    - b. Study the usefulness of electrical transcriptions available for educational use.
- C. Many believe radio is the fourth "R" in education. Even the most skeptical will admit that it is one of the most important aids in modern education. Therefore, the job of the individual coordinator would be to familiarize the teachers in his or her own building with the programs and radio facilities available to them in the Eugene area.
  1. Motivate the use of radio in the classroom.
    - a. Make recommendations for the most desirable times educational programs can be used in the classroom.
    - b. To distribute weekly bulletins (to be issued by KRVM) containing program information, teacher-preparation material, suggestions for follow-up activity, and references on the subject covered in programs.

- c. To formulate and recommend a program of in-school listening to the teachers.
  - d. To sponsor demonstrations of the use of radio in the classroom in Faculty meetings. (The coordinator could be aided in this endeavor by KRVM's Program Director).
  - e. To help teachers obtain the maximum use of radio receivers by using favorable placements of sets, demonstrations of proper tuning, etc.
  - f. To motivate schools to increase participation in KRVM programs.
2. Act as representatives of the teachers to the administration on Radio matters:
- a. To voice needs for motivation.
  - b. To strengthen local programming by giving support to the good programs and criticizing the poor productions.
  - c. To assemble material prepared by teachers themselves on radio utilization as an aid to other teachers.<sup>13</sup>

Many of the educational broadcasting stations send out utilization guides to be used by the teachers in connection with given broadcasts. When a teacher uses a radio program in her classroom she should find out beforehand if guides are available. A utilization guide should contain:

- Title and number of the program
- Title of the series
- Broadcast date and times
- Group to which program is directed
- Some type of written resume' of the program
- Pre-broadcast suggestions
- Post-broadcast suggestions
- What to do during program (if such activities are called for in program)

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13. Station KRVM, A Compilation of Suggested Duties for Radio Coordinators (Eugene, Oregon: Oregon State Agriculture College) pp. 1-3.

Vocabulary  
 Reference material  
 Other teaching aids available<sup>14</sup>

City public school systems of broadcasting provide the closest type of coordination between the broadcasting program and the classroom situation. The same program can be presented several times daily. The scheduling of classes can be arranged to make maximum use of the radio programs. The teachers and the administrators can make recommendations concerning types of programs and how they are presented.

In most city high schools using educational programs, the central sound system of carrying programs to the class rooms is used. In the Cleveland schools, pupil operators are placed in charge of operating the central sound system.

#### Code of Rules for Control Room Operators

At a high school radio workshop in Cleveland the following code was developed for student operators of a central sound system. It is evident that the operator would have to have average ability and preferably above average ability. He should be able to carry out instructions to the letter. There would be no margin for error. He would have to have a conception of the fundamentals of radio receiving and broadcasting. Horse-play, by all means, would be out.

- (1) The chief operator is responsible to the faculty adviser for the general efficiency of the sound system

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14. Alvin M. Gaines, WABE-FM Educational Radio in the South-east (Atlanta: Board of Education in City of Atlanta )  
 p. 15.

- and the cooperation of period-operators.
- (2) Each of you is responsible for the efficiency of the system and the technical excellence of a program presented during your period of duty; consequently, you must cooperate closely with the directors and assistants in charge of each studio program. You must follow the requests made by the chief operator. You must observe the recommendations on FM reception made by our Board Radio Station.
  - (3) Your principal daily job is to "monitor" broadcasts so that they may be heard in the classrooms at the best volume and with greatest possible clarity. No one -- or no other occupation -- should keep you from listening to every program you send out.
  - (4) Report promptly at the beginning of your period of duty. If you know in advance that you must be late or absent, tell the chief operator so; explain later to the teacher in charge.
  - (5) Do not leave the control room until the next operator reports. If it appears that he is absent, report the fact at once to the faculty adviser.
  - (6) Help the operator who comes after you. If a broadcast is scheduled soon after he is due to report, anticipate his difficulties; set up his switchboard for him. If there is a "rookie" in the group, give him the advantage of your experience.
  - (7) Pay attention to the broadcast schedule. Know on Monday what you may have to do on Tuesday, etc. Anticipate demands on your skill.
  - (8) Get programs started on time. For WBOE programs, throw the main switch as soon as the gong sounds that precedes the ten-second period of silence.
  - (9) Throw off the switch as soon as the program is completed. Watch the director for this information. For WBOE programs, the switch should be thrown immediately after the station identification.
  - (10) Check classroom reception occasionally to see that teachers are satisfied.
  - (11) Make careful notes of complaints or of any requests for reception or change of schedule, and see that such requests are communicated promptly to the chief operator.
  - (12) See that no one is present during a broadcast except those directly concerned with its production.
  - (13) Refuse admission as politely as possible to any pupils who may wish to "visit" the control room or the studios.
  - (14) See that the broadcasting rooms are kept clean and in good order.

- (15) Follow instructions on handling equipment and records; keep performers or hangers-on from touching any property for which you are responsible. Microphones and other studio property are under your supervision during the time you are on duty. The chief operator will check on the condition of the studio equipment at the end of the day.
- (16) Read the WBOE program bulletin for each week; sign the WBOE log when you handle broadcasts from that station; and be sure that the control room clock is set with WBOE time-signals.<sup>15</sup>

Suggestions for Public Address Operation  
In Connection with WBOE Reception

A second part of the code set up at the Cleveland workshop gives rules on coordinating the operation of a central sound system with a specific radio station. In this case, it is Station WBOE which is owned and operated by the Cleveland Public School system. Every radio station has a different pattern of operation and the person who is utilizing their programs should be familiar with this pattern.

- (1) All regular educational programs in the junior and senior high schools are preceded by a three-tone gong. Ten seconds of silence follows the gong before the program begins. It is usually desirable to "tune in" the rooms which are to receive a program during this ten second period immediately after you hear the gong.
- (2) Regular educational programs end with the station announcement, "This is your school station WBOE". Operators should "tune out" classrooms as soon as the final announcement of a program is completed. A period of fifteen seconds of silence is scheduled

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15. High School Radio Workshops in Cleveland (The Federal Radio Education Committee, with the cooperation of the U. S. Office of Education, Federal Security Agency, Washington D. C.: Government Printing Office, 1944).

- to follow each program in order to allow operators time to turn off classroom switches.
- (3) The purpose of the silent periods before and after all major programs broadcast to junior and senior high schools is to make it possible and convenient for classroom teachers to receive the program which they wish, no more and no less.
  - (4) It is not possible to have the clocks in many different schools kept in exact synchronization with radio time. WBOE announces the correct time at intervals daily. Operators may need to call WBOE to check their clocks. If this is not practical, operators should tune in on the control room speaker far enough in advance of a broadcast to make sure that it will go into classrooms on time.
  - (5) There is a shortage of tubes and other repair and replacement parts for radios and public address systems. The public address system should be turned off when it is not in school use.
  - (6) A program which is over-amplified through the public address system is likely to be distorted in the classroom. A program which is under-amplified makes for difficult listening. The volume of a program heard in the control room is not necessarily the same as that heard in a classroom. The best way to judge correct volume is to listen in the classroom where the program is being received.<sup>16</sup>

In the Cleveland schools a term prospectuses and program outlines for a given instructional series are sent to the teachers. Also the teacher receives a weekly Bulletin of Programs from WBOE. The schedule for the control room operators of central sound system is made up each week so the classroom teacher must know the week previous the programs she wants piped to her classroom. The teacher also has available outline sheets which suggest methods by which programs may be used effectively.

State-wide systems of educational broadcasting are becoming

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16. Loc. Cit.

ever more popular. The ultimate results of this movement is hard to predict but it most certainly will lead to more state control of public education. State control of the classroom situation will be necessary in order to make efficient use of the broadcast programs. This will call for state-wide synchronization of class schedules and periods.

#### Educational FM Plans

Twenty-three states are planning to set up state-wide FM educational networks, according to replies received by the Federal Communications Commission in response to letters addressed to state educational officials.

States where planning reached the legislative stage are California, Pennsylvania, South Carolina, Virginia, and Wisconsin.

States in which planning committees are active are Georgia, Illinois, Kentucky, Louisiana, Michigan, and Texas.

States without planning agencies but showing strong interest are Alabama, Iowa, Ohio, Oklahoma, Mississippi, Missouri, New York, and Tennessee. (The U. S. Office of Education reports that there has been some planning also in Indiana, Maryland, Montana, and New Jersey.)

As of July 15, 1947, six noncommercial educational FM broadcast stations held regular licenses, 32 construction permits were outstanding, 8 applications were pending, and 9 stations were on the air.

The 20 FM channels set aside for educational service in 1945 can be utilized by several hundred stations. "These could cover every square mile in the country with educational programs," say FM experts.<sup>17</sup>

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17. "Educational FM Plans" The Journal of the AER, VII (November, 1947) 5:34.



Many of the college and university stations of today will form the nucleus of the state-wide educational broadcast system of tomorrow.

Radio educational broadcasting has made unusual growth in the midwest. The University of Illinois owns and operates Station WILL, 5,000 watts with full daytime operation and also FM station WIUC. Station WOSU is owned and operated by Ohio State University. It has 5,000 watts power and operated on unlimited time. The University of Wisconsin owns and operates Station WHA, 5,000 watts, with full daytime operation, and has plans to have seven FM stations to serve the state. Station WBAA, 5,000 watts is operated and owned by Purdue University on unlimited time. Purdue has also filed application for FM. Indiana University has plans for both an FM and a standard band station. WSUI, 5,000 watts, is operated by the State University of Iowa. WSUI has a beautiful building and now has a construction permit for a FM and a television station. The stations of Chicago are used by Northwestern University but she expects soon to own her own FM station. WKAR, 5,000 watts, is operated by Michigan State College. Michigan State has also filed application for an FM station. Other universities and colleges which operate stations are North Dakota, Kansas, Oklahoma, Florida, Oregon State College, Luther College, State College of Washington, St. Olaf College, Cornell University of South Dakota, Baylor University, Rensselaer Polytechnical School, Iowa State College, Grove City College, Texas A. & M., St. Louis University, Loyola University, and South Dakota State College. Most

universities and colleges in the nation have expressed interest in obtaining a license for a frequency modulation station.

An example of a plan for a state-wide network of educational broadcasting is that of Michigan. There are to be four basic stations at Ann Arbor, Cadillac, Houghton, and Manistique. Of these four basic stations the key station will be the one at Ann Arbor. In addition, about thirty-five local stations will be built by educational institutions and school districts in the state. These local stations would be able to broadcast their own programs as well as rebroadcast programs from the basic stations. Also, programs for the network could originate at the local stations.

We have other examples of state-wide educational broadcasting as the Indiana School of the Sky, the Minnesota School of the Air, The Empire State FM School of the Air, the Oregon School of the Air, and the Ohio School of the Air.

#### Indicated Trends

A survey of the Minnesota School of the Air was made by Betty Thomas Girling in an attempt to find the extent and effectiveness of the Minnesota School of the Air's reception.

These were the facts sought and the answers gained by the Minnesota School of the Air survey of May, 1947. In addition to these results, several trends were indicated worth consideration. These are indicated as follows:

- (1) Ninety-six percent of the listening pupils in responding in-state schools listen to the Minnesota School of the Air regularly.
- (2) The larger audiences of the listening Catholic Schools

- demonstrated signal enthusiasm.
- (3) The Intermediate Grades of all regularly listening school divisions are significantly receptive to in-school broadcasts.
  - (4) Listening on the Elementary level is done in larger group situations than on the high school level.
  - (5) Rural schools demonstrate a high degree of readiness for programs designed to supplement teacher or equipment lack.
  - (6) In the state of Minnesota, 15.15% of all responding schools listen to the Minnesota School of the Air.
  - (7) The responding schools listen to the Minnesota School of the Air more than to any other broadcasts of the University Station -- KUOM.
  - (8) The responding schools listen to the Minnesota School of the Air more than to any in-school broadcast service presented in this area.
  - (9) Those schools regularly listening do so in large group situations, utilizing several series and demonstrating a high degree of enthusiasm.<sup>18</sup>

As a result of this survey the following recommendations were made to encourage better utilization:

- (1) A complete mailing list of all schools in Minnesota be provided, not only for survey purposes, but for special announcements, Teachers' Handbooks, and Bulletin distribution.
- (2) More intensive and extensive promotion of this division of University effort be developed.
- (3) The specific values of radio utilization in the classrooms of this area be investigated.
- (4) All teachers in KUOM's listening area be provided with instructions and recommendations for the utilization of radio in the classroom.
- (5) Pre-professional and in-service training for teachers in the value and use of this medium, be encouraged in all teacher training institutions.
- (6) More emphasis be placed on research in this field, with studies in the qualitative affect of radio in the areas of attitudes and understandings, as well as quantitative efforts similar to this one.<sup>19</sup>

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18. Betty Thomas Girling, Report on Survey of the Minnesota School of the Air (Minneapolis, Minnesota: University of Minnesota, November, 1947), p. 45.

19. Ibid., p. 50.

An interesting example of state-wide broadcasting is that of British Columbia in Canada. The major purpose in establishing this educational network was to supplement the educational facilities in the vast northern part of British Columbia. The programs originate at CBR, Vancouver, where they are transcribed. One week later they are broadcast from CFPR at Prince Rupert and then two weeks later they are broadcast from CFGP at Grande Prairie, in Northern Alberta. The Canadian Broadcasting Corporation has installed a chain of ten low-powered automatic transmitters through the central part of British Columbia which previously had very poor coverage. Other provinces, Alberta, Saskatchewan, and Manitoba are cooperating in preparing and preserving educational broadcasts.

Commercial stations offer many good programs that can be adapted to the classroom. However, many of the best of these commercial programs are broadcast at evenings or on weekends. For best utilization of these commercial programs, it would be best to have a system of transcription or recording. In the process of transcribing, all useless commercials could be left out. Also, any second rate programs could be eliminated from the classroom this way.

To best utilize commercial programs, a teacher or an administrator should have access to some composite radio guide such as Listening In which would have all the commercial programs available listed. Through this guide, the teacher could select the programs she would want her class to hear. After determining the programs

the teacher has decided she would like her class to hear she should then write to the broadcaster and see if there are any utilization guides to the program. With the many hundreds of programs on the air now it is possible to find many that would suit any class situation. A little ingenuity on the part of the teacher and administrator can add color along with information through the adaptation of radio programs.

Television someday will add another tool to the audio-visual arm of education. It has already been used successfully in experiments in schools. Radio and television together can do much to expand the horizon of our educational system.

A committee of educators selected the following network educational radio programs for the Federal Radio Education Committee:

Sundays -- Coffee Concerts (ABC), Story to Order (NBC), Fine Arts Quartet (ABC), Northwestern University Reviewing Stand (MBS), Invitation to Learning (CBS), World Security Workshop (ABC), America United (NBC), People's Platform (CBS), Time for Reason (CBS), House of Mystery (MBS), The Family Hour (CBS), The Ford Theater (NBC), The Greatest Story Ever Told (ABC), Exploring the Unknown (ABC), Sunday Evening Hour (ABC), Theatre Guild on the Air (ABC), and Story Behind the Headlines (NBC).

Monday through Saturday -- United States Service Bands (MBS).

Monday through Friday -- Nelson Olmsted (NBC), Fred Waring Show (NBC), American School of the Air (CBS), and Headline Edition (ABC).

Mondays -- Liberty Road (CBS), In My Opinion (CBS), Cavalcade of America (NBC), Voice of Firestone (NBC), The Telephone Hour (NBC), and Fred Waring Show (NBC).

Tuesdays -- Tales of Adventure (CBS), Frontiers of Science (CBS), Youth Asks the Government (ABC), America's Town Meeting (ABC) Boston Symphony (ABC), American Forum

of the Air (MBS), CBS is There (CBS), Labor U.S.A. (ABC), and The Voice of Business (ABC).

Wednesdays -- Alan Lomax' Song Train (MBS), The March of Science (CBS), Paul Whiteman Assembly (ABC), and Your United Nations (NBC).

Thursdays -- Gateways to Music (CBS), In My Opinion (CBS), Mr. President (ABC), and Family Theatre (MBS).

Fridays -- Opinion Please (CBS), Burl Ives (MBS), Highways of Melody (NBC), Meet the Press (MBS), and The World's Great Novels (NBC).

Saturdays -- Story Shop (NBC), The Garden Gate (CBS), Coffee With Congress (NBC), Let's Pretend (CBS), Adventure's Club (CBS), Land of the Lost (ABC), American Farmer (ABC), Home Is What You Make It (NBC), Our Town Speaks (ABC), National Farm and Home Hour (NBC), Metropolitan Opera (ABC), Columbia's Country Journal (CBS), NBC Symphony Orchestra (NBC), Hawaii Calls (MBS), Sound Off (CBS), and Chicago Theatre of the Air (MBS).<sup>20</sup>

### Equipment

The types of equipment needed in adapting educational radio programs to the classroom are such items as a central sound system or systems; recorders of all types such as record recorders, wire recorders, tape recorders, and record players; receivers, both AM and FM; or any type of equipment used in recording or receiving, directly, educational broadcasts.

There are many ways in which educational radio programs may be presented to a class. They can be received at a central point and then piped to the classroom through a central sound system or

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20. "FREC Program Selections" (Broadcasts for Schools, The Journal of the AER, VII, December, 1947), 46.

received directly in the classroom through the use of an AM or FM receiver. Also, the program can be received at a central receiving point and recorded on any of the several recording devices, and later presented to the class through the medium of a central sound system or presented in the classroom on a record player.

The use of the transcription playback and record player in the classroom has advantages:

The playback and record player for transcriptions and standard phonograph records open an entire new field to the teachers, since a vast amount of teaching material is now available in these forms. This material has all the attributes of radio:

- Immediacy -- Often presents information that cannot be found in books, either because of its immediacy or because experts haven't yet published their findings.
- Dramatic quality -- Vitality.
- Carries emotional impact -- Emotions important factor in building attitudes (democratic way of living, responsibility to group, service in industry, honesty, law obedience and other attitudes.)
- Permanency -- Permits pre-listening (teacher may audition discs before using).
- Re-usability -- Repetition for review, clarification or emphasis; may be used and re-used as often as wished and whenever wanted (in whole or in part).
- Convenience -- Excellent for individual work with accelerated groups, retarded groups, students who have been absent (missed original presentation); other specially classified groups.
- Value -- Build up transcription library of historic value; preserve the excellent radio program which might otherwise be lost after the initial broadcast.
- Like radio, the transcribed and recorded program --
  - Is a supplementary teaching device.
  - Is a powerful motivator for related classroom activities.
  - Is a pleasurable listening experience.
  - Provides an interesting change of "page" bringing variety and interest to lesson-presentation and supplementation (variety-classroom procedure).
  - Brings the "expert" into the classroom -- Children get a chance to "meet" famous people, hear their voices.
  - Brings newest and latest developments before courses

of study can be revised or books written to include them.

- Brings information which would require long hours of research by the instructor if he could obtain the information at all (a boon to already over-worked teachers); this material presented by the expert -- authentic.
- Fosters socialization, group activities (sharing the "listening" experience-- audience situation).
- Builds desirable attitudes.
- Trains in listening -- develops discriminate listening.
- Serves as a spring-board for discussions to follow (on a large range of subjects).
- Makes "history live" -- great literature "live" (not only the stories themselves, but the authors and times.)
- Makes students aware of the importance of the language arts in presentation of programs in all subjects (speech, writing, expression; disc-analysis for pronunciation, diction, etc.)

The play-back with microphone attachment:

Versatility of this equipment -- overcomes acoustic differences and difficulties; can be played at preferred volume, pitch and brilliance).

- For stimulating broadcast techniques (classroom, club or assembly groups).
- For assembly use; music may be played as background with voice speaking over music.
- For indicating "mood" music for creative expression: in art (music gives inspiration for creative expression; teacher may call attention to "pointers" using microphone to be heard over music); in rhythmic expression (the dance, free play, etc. -- kindergarten-primary imagination play).
- As a device to assist the gym teacher; music for exercises, drills, dances, etc.; microphone use for teacher or leader's calling out instructions to class-group.
- As a public address system (with or without additional speakers, one or more microphones possible); in assembly hall use; other large meetings (P.T.A., etc.) faculty meetings with teacher institutes or demonstrations; banquets, hotel meetings, conferences, educational conventions, etc.
- For speech-drama class clubs, other language art groups, invaluable; study of forms of presentation,



narration, dialogue, interview; public speaking, speech.<sup>21</sup>

Recorded broadcasts may be presented more than once and be filed away for future use. Thus an enterprising school system could make a collection of good recorded broadcasts for given fields and have available a set of helpful audio aids. It would be possible for the central control point on a central sound system to both record a program and pipe it at the same time. In fact, it would be a good policy of a school to record all good educational broadcasts so they could be used over again. Of course, this is contingent on the fact that the school has an economical way to record broadcasts. Rapid development is being made in the field of recording. Such means as the tape recorder and the long playing record having reduced greatly the cost of recording. Knowledge of the type of programs to record and taking the kinks out of the recording process would require practice and some trial and error.

One of the many difficulties encountered in presenting radio educational programs to the classroom is the inflexibility of radio broadcast schedules. If there are two sections of one course and one section hears a broadcast while the other is unable to because the broadcast is only presented once, there naturally will be several conflicts. One solution to this problem is to transcribe the program and play it back to the second section. Radio programs that are

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21. Elizabeth E. Marshall, Use of Transcription Playback and Record Player (Chicago: School Broadcast Conference), p. 1.

broadcast other than class hours can be transcribed and later played back to the class.

It would do well for a school with a central sound system to have some economical means of transcribing programs, both commercial and educational broadcasts. A recording system would greatly augment the usability of the central sound system. A file of transcriptions could be built up. The United States Office of Education published an extensive catalog of recordings and transcriptions which are available either on loan or a permanent basis. The Journal of the Association for Education by Radio presents reviews of current recorded material.

A central sound system can fulfil two purposes that a classroom receiver cannot. First, it can assure reception of programs suited for high school students not merely for entertainment or adult appeal. Second, a central sound system can be audited by an administrator and thus the school officials can be sure that the program fits the grade level for which it is being used. A weekly master schedule of radio and recorded programs to be used in the various classrooms can be set up and checked by the administrator of the school.

If a school has a sound system there should be maximum utilization of it. Not only can it be used for broadcast listening in the classroom, but it can also be used for in-school programs, recording and playbacks for all classrooms, and local amplification of special events in the auditorium, gymnasium, music

room, and other activity areas.

Student operators can be trained to operate the control of a central sound system. A corps of trained student operators can be assigned specific duties at predetermined times and can be made responsible for piping given radio or recorded programs to scheduled classrooms at a given time. This group can be self-perpetuating by letting the older students train younger operators.

Specifications for school sound systems as developed by the United States Office of Education and the Radio Manufacturers Association Joint Committee on Standards for School Audio Equipment are as follows:

#### Specifications for School Sound Systems

It is proposed that Sound Systems for Schools be broken down into the following general systems, it being recognized that the proper performance of the systems is contingent upon favorable acoustic treatment or sound conditioning as well as design of equipment for temperature and humidity conditions normally encountered.

- I - - A two channel centralized system.
- II - - A single-channel centralized system.
- III - - An auxiliary system for use in auditoriums and /or gymnasiums, and/or cafeterias.
- IV - - An auxiliary system for workshop.

#### I Details of Two-Channel Centralized System

The two-channel centralized systems shall include the following:

##### 1.- - Control Unit

This unit shall be styled in a modern functional design suitable for installation in a centrally located school office or preferably in a "radio workshop." It should not be over forty-three inches high in order that the operator may have full vision to observe live talent. It shall contain all speaker line keys or switches, a clock, a volume control for each channel, all radio tuners, talk-back, and other controls. It preferably shall be large enough to accommodate a dual speed 16" transcription player and all pre-amplifiers. Adequate ventilation for any power amplifiers which may be housed in this unit shall be provided. For larger installations power amplifiers and

associated equipment, other than essential operation control equipment, may be housed externally.

2. -- Channels
 

Two program channels shall be provided. Input circuits from at least four (4) low impedance microphones, two (2) radio tuners, one (1) turntable and two (2) incoming lines shall be terminated in the control unit, with provisions for routing and simultaneous mixing of any four of these into either or both of the two program channels at the option of the operator. Microphone lines may be supplied to some or all of the following: the administrative offices, the auditorium, the music room, the speech room, the English room, the language room, the gymnasium, the bus-loading area, and other special purpose centers. Provisions for outgoing lines to other schools, radio stations, athletic fields, or playground speakers should be made, if required.
3. -- Radio Tuners
 

The radio tuners shall combine FM tuning for the educational and FM broadcast channels and standard AM broadcast reception. Adequate international short-wave bands are desirable. Adequate frequency compensation shall be provided for working in combination with the centralized system amplifiers. Adequate antenna equipment shall be provided for these tuners.
4. -- Monitor Speaker
 

A monitor speaker shall be provided at or built into the control unit, with switching to permit monitoring either channel.
5. -- Keys or Switches
 

Keys or switches to control the speaker line to each classroom and to each area served shall be provided in the control unit which shall also contain a master key or switch for emergency announcements to all areas.
6. -- Talk-back Provisions (Optional)
 

Where talk-back circuits are called for, to permit intercommunication between teacher and operator or teacher and principal, a separate amplifier and suitable controls shall be provided.
7. -- Flexibility
 

Consideration shall be given in the design of this equipment so as to provide flexibility of switching and to permit a reasonable amount of deviation from standard "package units." It should permit substitution without redesign.
8. -- Loudspeakers
 

Provide suitable speakers for adequate coverage of classrooms, music room and/or library, auditorium, gymnasium, cafeteria and bus loading terminals. These speakers should

be of modern design capable of faithfully reproducing the source material. Provisions shall be made to assure substantially the same volume regardless of number of rooms that are being used.

## II Details of a Single Channel Centralized System

The single channel centralized system shall include the following:

### 1. -- Control Unit

This unit shall be styled in a modern functional design suitable for installation in a centrally located school office or preferably in a "radio workshop." It should not be over 43" high in order that the operator may have full vision to observe live talent. It shall contain all speaker line keys or switches, a clock, a volume indicating meter, all radio tuners, talk-back and other controls. It preferably shall be large enough to accommodate a transcription player and all pre-amplifiers. Adequate ventilation for any power amplifiers which may be housed in this unit shall be provided. For a large installation power amplifier and associated equipment other than essential operation control and equipment may be housed externally.

### 2. -- Channels

One channel shall be provided. Input circuits from at least three (3) low impedance microphones, one (1) incoming line, one (1) turntable, and one (1) radio tuner shall be terminated in the control unit with provisions for simultaneous mixing of any four (4) of these. Microphone lines may be supplied to some or all of the following: the administrative offices, the auditorium, the music room, the speech room, the gymnasium, the English room, the language room, the bus-loading area, and other special purpose centers. Provisions for out-going lines to other schools, radio stations, athletic fields or playground speakers should be made, if required.

### 3. -- Radio Tuners

The radio tuners shall combine FM tuning for the educational and FM broadcast channels and standard AM broadcast reception. Adequate international shortwave bands are desirable. Adequate frequency compensation shall be provided for working in combination with the centralized system amplifiers. Adequate antenna equipment shall be provided for these tuners.

### 4. -- Monitor Speaker

A monitor speaker shall be provided at or built into the control unit.

5. -- Keys or Switches  
Keys or switches to control the speaker line to each classroom and to each other area served shall also contain a master key or switch for emergency announcements to all areas.
6. -- Talk-Back Provisions (Optional)  
Where talk-back circuits are called for, to permit intercommunication between teacher and operator or teacher and principal, a separate amplifier and suitable controls shall be provided.
7. -- Flexibility  
Consideration shall be given in the design of this equipment so as to provide flexibility of switching and to permit reasonable amount of deviation from standard "package units." It should permit reasonable substitution of equipment without the necessity of complete re-design.
8. -- Loud Speakers  
Provide suitable speakers for adequate coverage of classrooms, music room and/or library, auditorium, gymnasium, cafeteria and bus loading terminals. These speakers should be of modern design capable of faithfully reproducing the source material. Provisions shall be made to assure substantially the same volume regardless of number of rooms that are being used.

### III Details of Auxiliary System for the Auditorium, Gymnasium, and Cafeteria

It is recommended that the sound system provided for the auditorium and/or gymnasium and/or cafeteria be designed and installed to provide:

1. -- Tying the auditorium microphones and/or speakers into the centralized system.
2. -- Tying the gymnasium speakers and/or microphones into the centralized system.
3. -- Tying the cafeteria speakers and/or microphones into the centralized system.
4. -- Well balanced sound diffusion throughout the entire auditorium, yet retaining the auditorium stage direction as the effective source of all sounds.
5. -- Adequate mixing and volume control facilities at a point where the auditorium volume can be ascertained.
6. -- Amplification of ample power and fidelity for music and speech.
7. -- Consideration shall be given in the design of this equipment so as to provide flexibility of switching and to permit a reasonable amount of deviation from standard "package units." It should permit reasonable

substitution of equipment without the necessity of complete redesign.

#### IV Details of an Auxiliary System for Workshop

Suitable means shall provide for:

1. -- Local pick-up of plays or programs.
2. -- Broadcasting of the above over tie line into the centralized and/or auditorium systems, or to local broadcast station.
3. -- Recording of the above and feeding transcribed programs over tie lines into the centralized and/or auditorium systems, or to local broadcast stations.

#### V Accessories Commonly Required for Complete Systems

1. -- Record and transcription players.
  - (a) Transcription players  
This equipment shall be designed to feature noise-free reproduction transcriptions with the best fidelity practicable. A pick-up suitable for lateral cut transcriptions with optional provisions for vertical cut transcriptions shall be provided. The transcription player should be capable of playing 12" and 16" transcriptions at either 78 or 33- 1/3 RPM.
  - (b) Record players (manual)  
This equipment shall be designed to feature noise-free reproduction of good records with the best fidelity practicable. It should be provided with a suitable light-weight pick-up with good wide range response.
  - (c) Automatic record changers  
A well-built disc automatic record changer, preferably of the drop type shall be provided. It shall be equipped with a permanent point pick-up head, capable of reasonably good reproduction.
2. -- Recording equipment (all types)  
Provide adequate recording and playback facilities, either permanent or portable, to record and play back programs picked up in the auditorium, any classroom or by radio.
3. -- Microphones  
Provide microphones of low impedance types designed to give maximum frequency response for voice or music reproduction. The microphones shall be of rugged design capable of withstanding normal hard usage.

#### VI Protection to Consumer

The consumer should expect the supplier to furnish a strong warranty covering the equipment under normal usage for a period of time, usually ninety days. In addition, an instruction manual containing complete wiring diagrams and essential information for the care and operation of the equipment should be supplied with the equipment. The responsible supplier will probably be eager to offer an annual service or maintenance contract at a nominal charge. These indications of faith and good will will serve to protect both the consumer and the supplier.

On systems standard with the manufacturer, the seal of approval of the Underwriters' Laboratories, Inc., should be displayed on each piece of equipment involving fire or shock hazard. Major standard elements of custom built systems should also display this seal. Similarly, all wiring and the installations should be examined and approved by the local or state approval agency.<sup>22</sup>

The location of loud speakers in the classrooms presents several problems. Generally, a location in or on the front wall is best so long as it is above the blackboard and does not interfere with any of the visual aids as maps and charts. The acoustic properties of a room may be bad which may call for the application of sound absorbing materials. A large auditorium may require several speakers to give proper coverage. Loud speakers in a gymnasium should be placed high out of range of any play equipment and should be protected. If desired, headsets can be provided for the library thus offering the advantage of individual listening without interference to those who desire to study.

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22. School Sound Systems (U. S. Office of Education and the Radio Manufacturers' Association Joint Committee on Standards for School Audio Equipment, Washington D. C.: Government Printing Office ), pp. 20-25.



There are two general types of radio broadcasting. One is amplitude modulation as used by most commercial radio stations and older educational radio stations, and the other is the newer system of frequency modulation. Frequency modulation was exploited during World War II and was seen to have a commercial and educational value. FM has grown rapidly since the war both commercially and educationally.

The Federal Communications Commission has set aside five FM educational channels the country over for the use of noncommercial educational institutions. These five channels will afford room for hundreds of educational FM stations all over the country. These five channels are among the choicest channels in the spectrum. They immediately adjoin the thirty-five channels set aside for commercial FM broadcasting so educational FM broadcasts will be audible on most ordinary FM home receivers.

FM has several advantages over AM. In FM, static and station interference are virtually eliminated. FM can cover virtually the full range of sound audible to the ear while there is a considerable range audible to the ear that AM does not cover. The range of AM is much farther than FM because AM will reflect while FM will not.

If a teacher is using a radio in the classroom to receive a broadcast there are several pitfalls to avoid. The receiver should be tuned in several minutes before program time and then the volume turned down until the desired program begins. There should be no interruptions to the class while the program is in progress. In

tuning in a receiving set, the knob should be turned slowly in one direction until the program begins to fade. Then this process should be reversed until a point is found on the opposite side where the program again fades. Half-way between these two points on the dial is the point where the reception is most distinct. About half-way between base and treble on the tone control is best. The radio should have an outside aerial and a good "ground" connection.

## CHAPTER III

## TECHNIQUES IN ADAPTING RADIO TO THE CLASSROOM

## Social Adjustment

There are two fields in which radio is particularly adaptable. One is music and the other is social science. Of the two, probably the programs for social science are more all-inclusive and more varied. Social Adjustment covers a large range of topics as history, political science, social science, sociology, politics, economics, consumer education, adult education, geography, current events, foreign relations, public service, health, and many others.

Before getting into discussion on social adjustment perhaps we should study the social aspect of radio itself. Radio broadcasting is just a little over twenty-five years old, yet there are thirty-four million American families that have radios. This is ninety per cent of all families and double the number that have telephones. It is also twenty-five per cent more than families that have bath tubs. There are over one thousand radio broadcasting stations, thirty-five regional and four nation-wide networks. We should remember that radio is a reflection of the social, economic, and cultural life that a people live. Radio can be an instrument for distraction as well as an instrument for information. This point was well proven by Mr. Goebels of the Nazi party.

News broadcasts are easily adapted to the social science

classroom. The unfortunate part of it is that the best newscasters broadcast in the evening after class hours. If these evening broadcasts are utilized it would have to be through some means of transcription or recording. However, it is possible to find a news broadcast on the air about any period of the day or night. The Radio Council for Chicago Public Schools suggests these activities in connection with news broadcasts:

#### Suggested Activities

- (1) A technique which has been used effectively to motive interest in news programs is that of anticipating the contents of the program. (This is particularly valuable for the weekly programs --"That's News to Me," and "It Happened Last Week." These programs are limited in the number of items discussed and, therefore, only the most significant happenings are covered.) Aside from a certain amount of gratification derived by guessing at topics which the newscaster may present, the children soon begin to develop news sense in their selection of items. In this connection a bulletin board may be set aside for posting clippings, maps, and pictures concerning news developments.
- (2) To make the news more personal interest to children, encourage them to ask and to answer, "How does this affect me?" (When a newscaster relates some current event concerning, let us say, steel, children may speculate on the amount of steel in their school building; the steel in the streetcars and busses they ride to school; the steel used in their homes. When a story on prices or the cost of living comes into the news, a committee may want to visit stores to actually see current prices and look through back issues of newspapers for comparison. News of Universal Military Training becomes more meaningful when looked at from a future trainee's point of view.) The happenings of the day, as reported in newscasts, do affect children. By realizing this they acquire a keen interest in news, and even more important, they develop that sense of good citizenship which makes them interested in controlling events.

- (3) Another means of advancing a sustained interest in current events may be through the development of a class scrapbook, or several scrapbooks. A biographical book may contain biographies of people currently in the news. A geographical scrapbook would include places in the news. A regular current events' scrapbook would include many items concerning particular events in the news.
- (4) Children may prepare their simulated newscasts. A different committee can be made responsible for a newscast each week. Also, children may prepare commentaries on the news -- giving their opinions. By doing this, they will quickly learn to distinguish between fact and opinion. A straight news broadcast presents facts. Commentaries present opinions. Both types of broadcasts would include background information and methods for showing how this particular news affects the audience.
- (5) Accounts of school happenings can be written for simulated broadcasts.
- (6) Some news topics are sufficiently dramatic to lend themselves easily to dramatization for classroom use or for assembly programs.
- (7) Certain topics may suggest class excursions. (That's News to Me," particularly stresses items of interest to Chicagoans.)
- (8) For all projects adequate material is needed. The children may want to set up a news corner, containing globes, dictionary, maps, newspapers, periodicals, and reference books.
- (9) There are certain situations, places, and people we can predict will make news and will stay in the news over a long period of time. We know, for example, the European Recovery Program, the countries participating in that program and the leaders involved in carrying it out will stay in the news. Discover facts about the program, read about the participating countries and the leaders. There are many, many more situations, places and people which will stay in the news. By consistently following the news of these situations, places, and people, children will acquire a more thorough knowledge and a better understanding of the meaning of the news.

- (10) Encourage children to listen to news at home. (And while doing this, encourage them to distinguish the commentators from the straight newscasters). A story may "break" after school hours. Point this out and help the children to listen for that story. Various committees may be assigned to listen to different newscasters and commentators. They may "report" the next day on what they heard.<sup>23</sup>

In order for students to properly understand news broadcasts they must be fully oriented on world, national, state, and local problems. It is the duty of the teacher to keep before her students the problems of the day. For in understanding the problems of to-day the students will better understand the problems of the past.

A series of broadcasts by station WBEZ--FM Chicago on Stories of Famous American Documents gives a good sample of the types of activities that can be carried on by a teacher in social studies.

For general activities for a whole series the suggested activities include a review of the Four Freedoms as set forth by Franklin D. Roosevelt in his Message to the 77th Congress. The class could collect pictures of noteworthy persons who have contributed to the philosophy of freedom and democracy and thus have a "Hall of Fame." Assignments could be made on such documents as: The Mayflower Compact, The Declaration of Independence, The Preamble of the Constitution, The Bill of Rights, Washington's Farewell Address, Lincoln's Gettysburg Address, and Wilson's Flag

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23. Chicago Public Schools, News (News Programs for Classroom Use in Elementary and High Schools. Chicago: Radio Council WBEZ, Chicago Public Schools, September, 1948), pp. 4-5.

Day Address. Reports on motion picture, newspaper, or magazine accounts of the Freedom Train could be given. Records that could be played before a broadcast include Lonesome Train, Ballad for Americans, On a Note of Triumph, The House I Live In, March of the United Nations, God Bless America, and Freedom Train.

For a program on The Star Spangled Banner some of the activities could be: A report on Francis Scott Key, or the history of the flag and its development, write a resume of the broadcast, find out what war was being fought at the time of the writing, find out what fort the British were attacking at Baltimore, review all verses of the song.

For a broadcast on the Declaration of Independence the following activities could be carried on. There could be reports on Thomas Paine, Patrick Henry, Thomas Jefferson, John Adams, and Benjamin Franklin. There could be a discussion on the Continental Congress and the Committee of five (Thomas Jefferson, John Adams, Benjamin Franklin, Roger Sherman, and Robert Livingston) who were to prepare the Declaration of Independence. The convention of 1775-76 could be compared with political conventions of today. Terms for discussion could include tyranny, convention, discord, hot-heads, militia, armed resistance, disunity, sanction, delegate, rough draft, entreaties, and dissension. The 16 mm. film "Declaration of Independence" could be shown.

For the program on the Last Message from Corregidor the activities could be these: Have a student locate Corregidor on the map. Discuss stories of bravery of G.I.'s. Point out the

traditions of the United States in time of war. Terms to discuss could be delaying action, ammunition, cross-fire, communications, assault, and defense. Records to be played could be "Rendezvous with Destiny" (Franklin D. Roosevelt), "We hold These Truths," "We Are Many People," and "Americans All-- Immigrants All". Films that could be shown are "News Parade of 1942", "D-Day Minus One", "Divide and Conquer," "Freedom Comes High," "Objective Security", "Challenge to Democracy", and "Radio Operator."

For the program on the Gettysburg Address the activities could be these: The class could review Lincoln speeches and sayings. Reports could be assigned on Jefferson Davis, Confederacy, Abraham Lincoln, or William Seward. Such films as "Presidents of the U.S." could be shown.

As can be seen through these various examples, there are many activities that can be carried on no matter what the topic of the broadcast. The teacher with a little forethought before a broadcast can do much to enhance a program and add to its effectiveness. A list of activities that could be carried on before and after a social science broadcast are these:

- (1) Assignment of reports on persons or events, connected with the broadcast.
- (2) Tell or write a resume' of the broadcast.
- (3) Pick out quotations and ask who said them.
- (4) Discuss events that led up to the subject of the broadcast.
- (5) Show films on the subject.



- (6) Play records or transcriptions on the subject.
- (7) Assignment of supplementary reading of books or magazine articles.
- (8) Conduct a word study of terms used in broadcast.
- (9) Discuss leading characters of the broadcast.
- (10) Locate on a map places named in the broadcast.
- (11) Point out significance of the broadcast.
- (12) Recall favorite stories of the period.
- (13) Visit exhibits with a close interest to the broadcast.
- (14) Make pictures of scenes from the broadcast.
- (15) Have class write letters of evaluation of the broadcast.
- (16) Make a scrapbook with clippings and pictures about the subject of the broadcast.
- (17) Show slide films on the subject.
- (18) Re-dramatize part of the broadcast.
- (19) Recall outstanding parts of the broadcast.
- (20) Bring the class exhibits connected with the broadcast.

Some broadcasts call for specific activities. For an example, a broadcast on General Marshall's letter to Eisenhower appointing him head of S.H.A.E.F. could call for activities like these: Discuss the meeting of the "Big Three" at Teheran. Identify organization units of the Army. Discuss World War II generals. The activities for a given broadcast should be patterned to fit that broadcast.

These activities should vary from broadcast to broadcast. This again calls for ingenuity and forethought on the part of the teacher and

administrator.

Educational radio can be used as a telling force in adult education. There are three different types of situations in which radio can be used for adult education:

- (1) Programs during working hours when the hearer can listen to the broadcast and still perform his job.
- (2) Programs during non-working hours at evening and on week-ends when the hearer can listen at home.
- (3) Radio programs as a supplement of adult educational classes.

Extension courses to adults can be offered by radio. Supplementary material can be sent out as guides, reading material, background material, sources of information on the subject, references. All these can be combined to make the broadcast more effective as an educational force. There are many fields in which adult education by radio can be used -- agriculture, consumer education, home economics, government, and job placement.

Juvenile delinquency is another area that can be attacked through the use of radio in the classroom. An example of a program on this subject is "The Eagle's Brood", a special one-hour documentary that was presented by CBS. As a supplement to this type of a program the teacher could have reports or current cases of juvenile delinquency that appear in the newspaper. One of the advantages of radio in this field is that a student will believe a radio announcer quicker than he will believe the teacher.

Problems of health can be attacked by radio education. There are available programs of physical fitness, care of teeth, proper diet,

and proper health habits and attitudes. A sample of a radio program for health is the radio battle against VD. Columbia University in cooperation with the U. S. Public Health Service recently produced a series of dramatic transcriptions on syphilis.

An example of versatility of educational radio is the use of radio by the U. S. Army for rehabilitation and reconditioning of wounded soldiers. P. A. systems were provided for army hospitals and packets of radio transcriptions were sent around weekly.

Interest in controversial issues can be stimulated through the use of radio. Programs on world or national problems can be used as the focal point for a discussion of the student's future part in solving these problems. Even radio programs outside the classroom can be assigned and used for the basis of a discussion. In order for the social science teacher to best use the medium of radio, he or she must be well informed on the nature and number of radio programs available both for in-class and out-of-class listening. The teacher should be alert for events that will be broadcast of major importance as presidential addresses, important campaign speeches, election results, etc. The effectiveness of radio use in the classroom rests equally on the teacher and the administrator.

International understanding can be fostered through the use of radio. Programs of other peoples and other countries will bring to the student the particular problems and achievements of given groups all over the world. Knowledge of the peoples of the

world would bring appreciation and understanding. This knowledge would also show the advantages and opportunities that our youth have that other youth do not have. Radio can:

- (1) Show the basic similarity and brotherhood of mankind.
- (2) Stress the contribution and achievements of each nation for the common good.
- (3) Humanize people in other countries so that they are no longer strangers but people we know and respect.
- (4) Breathe life into locations students formerly thought of as dots on a map.

#### English and Literature

Language is the tool most used by those in radio. All radio programs are intended for the listener's ear. The only things the ear can hear are either the spoken word, music, or noises. Because the spoken word is used so much on radio there is always present the unconscious benefit of enlarging the vocabulary and improving grammar. Most of the words that go on the air are read from a script which has been thoroughly checked for grammatical errors. Because the spoken word is used so much on the air a premium is paid for unique and interesting ways of expressing. All good announcers and commentators have mastered the arts of enunciation, grammar, expression, vividness, clarity, accurateness, and interest appeal. All students would do well to cultivate these arts. In no manner do we exert our personality and influence more

than through the spoken word. To listen regularly to good programs on the radio is to be in constant contact with the best examples of the spoken word.

The means and methods of using radio programs as a supplement for the language arts are only limited by the limits of ingenuity of the teacher. Assignments can be made instructing the student to copy down vivid and unique means of expression as heard over the radio. The student can write down new words he hears over the radio and after looking up the meanings he can present them to the class. Searches can be made of radio programs for poor and incorrect grammar.

Teacher Emily Peterson of Chicago got these results after an extensive vocabulary study of several radio programs:

The radio not only acted as a motivator but helped in bringing about the following experiences:

- (1) Phonetic analysis.
- (2) Structural analysis -- of words and their derivatives.
- (3) Syllabication.
- (4) Use of the dictionary.
- (5) Added exercises -- in auditory and visual acuity.
- (6) Proper enunciation.
- (7) Vocabulary development.
- (8) Composition experience -- oral and written.
- (9) Extended reading -- in social science and literature.
- (10) Oral reading -- for an audience situation. <sup>24</sup>

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24. Emily Peterson, "Radio Materials Teaching of Radio" (The Journal of the AER, VIII March, 1949), 75.

Radio as contemporary literature offers interesting possibilities for classroom adaption. By the vividness and color of animated dialogue and dramatization radio helps the student to learn more things with greater accuracy and permanence than they could learn before the birth of radio. Radio is a reasonably faithful reflection of the contemporary American mood and spirit. It reflects the intellectual, moral, and religious paths we are following. Radio ties the classroom to the outside world. It adds another dimension to the classroom experiences.

Several methods can be used in presenting the literature of radio to the classroom. The first is the direct broadcast into the classroom. The second is through the use of transcriptions which have been made of previous radio programs. The third is through the use of outside reports on assigned radio programs.

Interest in literature can be developed through the use of both in-class and out-of-class radio listening. Radio can be used as the motivating influence that would open the eyes of students to all types of literature. Radio listening would enlarge the literary horizon of the pupil and bring the pupil a fuller prospective of the whole field of literature.

Recordings and transcriptions are available of many of the great works of literature, such as Shakespeare's plays. Also, there are dramatic programs on the air of some of the great books. Biblical stories are broadcast. There are several good dramatic programs on the radio. All of these could be used to make literature more real and

interesting to the student.

Classroom activities to be used in connection with literary radio programs are as follows:

The following general suggestions for the teacher will aid in stimulating interest in reading:

- (1) Have the recommended books in the classroom at the time of broadcast and make arrangements with the librarian to permit classmembers to check out books immediately after the broadcast. Occasionally it may be desirable for the teacher or librarian to recommend books that are similar to the ones recommended on the radio broadcast.
- (2) Invite the school librarian to listen to the broadcasts with the students.
- (3) Post lists of books, pictures, maps, book covers, posters, etc., on bulletin board or blackboard in the classroom and in the school library. Leave the list posted from week to week. In some schools the list of books is mimeographed and given to each student to keep in a notebook.
- (4) Encourage students to discuss the reasons why they like the recommended books which they have read.
- (5) Encourage, but do not require, other activities, such as script writing, dramatization, etc., which might grow out of the broadcasts or the reading of recommended books. Give regular credit for such work.
- (6) Keep a large world map in the classroom so that the sections of world which are mentioned in the broadcasts may be pointed out to the students.
- (7) Avoid formalized, or required activities such as memory work, written book reports, assigned readings, and detailed analyses of the recommended books. Any such work should be done voluntarily and entirely suited to the individuals. These books are not necessarily planned to fulfill any course of study requirement, but to stimulate wide and selective reading. Some teachers have found students read more while listening to the radio programs if no outside reading requirements are imposed than the same students read previously when reading requirements were imposed. If your school has a "point" system, try not to use it with the radio class.
- (8) Invite parents to listen to the broadcasts at home. Students should be encouraged to discuss the programs with their parents.

The following pattern of utilizing the Reading Is Adventure program is typical:

- (1) Make arrangements with the school librarian to listen to the broadcast and to bring to the class the books recommended for that day. Boys in the class frequently go to the library immediately before the class period begins, remind the librarian to come to their class to listen, and bring the books to the classroom.
- (2) Regular class work is conducted until approximately five minutes before the broadcast is scheduled to begin. The teacher then prepares the mind-set of the students for the listening period. During the preparation period, one of the students is setting up the radio; turning it on to get it warm, keeping the volume down so low as to be inaudible, and tuning in the station.
- (3) When the theme music is heard by the operator, the radio program is turned up loudly enough for all to hear comfortably.
- (4) During the listening period the teacher listens attentively and occasionally takes notes for use in the post-broadcast discussion.
- (5) After the broadcast the teacher or librarian guides but does not dominate the discussion of books that have been recommended on the program. Students are permitted to check out the books that they want to read. Sometimes when the library contains but few of the books for one week, the librarian brings substitute books or books recommended the previous week. This activity generally takes about fifteen minutes, or less, after which the regular class work is resumed.
- (6) The teacher encourages students to exchange books during the week.
- (7) The students usually require a few weeks to get accustomed to listening to the radio programs for educational rather than entertainment purposes.<sup>25</sup>

### Science

Adapting the radio to science is more difficult than many subjects. However, radio can be used as a supplement to the science

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25. Texas State Department of Education, Teacher's Classroom Guide for Reading is Adventure (The Texas School of the Air, Bulletin No. 496, 1948-49. Austin, 1949), pp. 9-11.



classroom. Probably the best available programs for use in the science classroom are the stories of the lives of great scientists. The lives of men as Pasteur, Newton, and Galileo have been dramatized on the radio.

WBEZ, Chicago Public Schools station, has a series of programs entitled "Your Science Story Teller." The subject of the broadcasts cover such varied subjects as hobbies, flowers, gardens, birds, nature, and others. These are some of the activities that WBEZ suggest as supplement to the broadcasts:

- (1) Draw the flower, tree, bird, machine, or invention that is being discussed.
- (2) Take a trip to a museum or zoo or greenhouse where they have a specimen of the object being discussed.
- (3) Make maps of the world or countries, locating the mineral, plant, or animal which is the subject of the broadcast.
- (4) Make models of the invention or machine.
- (5) Make a vocabular list of scientific words on the broadcast.
- (6) Find pictures of the subject of the broadcast.
- (7) Locate on a map points of interest discussed in the broadcast.
- (8) If the broadcast is of a machine or invention, discuss how it is used today.
- (9) If the subject is a plant or animal, name the related species.
- (10) If the broadcast is of smaller animals, specimens can be brought to the class.

- (11) Plan a bulletin board on the subject of the broadcast.
- (12) Write compositions on the subject.
- (13) Make a list of questions during the broadcast to be answered after the broadcast.
- (14) Plan a balanced aquarium.
- (15) Follow-up assignments can be made on library work.

Teaching aids that can be used to implement science broadcasts are:

- (1) Maps of rainfall, thermal regions, growing seasons, agricultural regions, mineral regions, and product maps.
- (2) Bulletins from various manufacturers and governmental agencies.
- (3) Books and magazine articles on the subject.
- (4) Exhibits of materials and processes.
- (5) Motion pictures and slide films.

The nature of scientific programs available on both educational and commercial stations vary greatly. There are programs on scientific news, early scientists, major scientific developments of the past, applied science vocations, and many others. Fitting these diversified types of programs into the classroom calls for considerable ingenuity on the part of the teacher.

#### Fine Arts

Music of all blends and kinds can be found to fit the music classroom. In no field is there more abundant programs fitted for

the classroom than those of music. There is little reluctance on the part of radio stations to broadcast recordings of music whereas they are extremely reluctant to present transcriptions of such programs as drama, round table discussions, and news. The biggest problem of the music teacher is to know what selections are going to be played over a given program and thus provide his students with the necessary background. Some programs even present their own background to the selections of music they play. This background includes such information as biographical sketch of the composer, history of the composition, type of composition, and the musicians or orchestra that will play the composition.

Teaching aids that can be used to supplement radio broadcasts of music are:

- (1) Phonograph and records.
- (2) Song books.
- (3) Hymn Books.
- (4) A history of music.
- (5) Biographies of composers.
- (6) Current music magazines.
- (7) Stories of world's great music.
- (8) Pictures of musical settings.
- (9) Charts of the instruments.
- (10) Piano.
- (11) Pitch-pipe.
- (12) Staff liner.

- (13) Music films.
- (14) Opera and orchestra scores.
- (15) Tonettes or toy flutes.

The method of utilization of radio broadcasts of music is of course up to the teacher. The type of musical program being heard has much to do with how it is utilized. Folk songs and ballads would be presented in a different manner than symphonies. Band music would naturally leave the class in a different mood than an oratoreio. Some of the suggestions for background material would be a biographical sketch of the composer, a discription of the country, and locality of the home of the composer, the distinguish-  
ing characteristics of this particular kind of music, description of the orchestra or the particular musical instruments that will play the music, and a general historical background for the composition.

The music teacher should be sure he has all the utilization guides, schedules, or bulletins available on the program. These can be obtained by writing to the originating agency of the program as broadcasting station, school of the air, university, or public school system. The teacher should know the selections to be presented in advance so he can tell if the program will fit into his lesson plan.

An interesting development in musical broadcasting was the experiment of Marquette University in giving music tests by radio. This offers the possibility of screening musical students and thus

prevent much difficulty for both the teacher and the student.

There are several ways radio can be used in the art classroom. There are broadcasts on the lives of great painters as Raphael, Leonardo, Rubens, Renoir, Rembrandt, Matisse, Manet, Van Gogh, and others. There are appreciation broadcasts of various works of art.

Supplementary aids to an art broadcast would of course include a copy of the picture being discussed. Some are programs that provide color copies of the picture they are to discuss in their broadcast. As much visual material as possible should be used to supplement an art broadcast. Handbooks, resumes, briefs, background material are all important in getting the most out of the art broadcast.

Programs on crafts such as pottery, glassware, weaving, woodcarving, and quilting are broadcast. Architecture is also a field that can use radio as an aid to study.

Art broadcasts should be enjoyable listening experiences rather than lessons. Radio should in no way handicap originality to expression in art.

Art programs can be tied into other fields, as for example social studies. An art study of Mexico and Latin America would naturally include some social science. Another example would be the effect of art on history or religion.

Any radio program which uses a lot of imagination and rich imagery can be used to serve the art classroom. These programs

can be the inspiration for works of art.

### Vocational Education

Agricultural education by radio has taken big steps forward. Governmental agencies interested in agriculture, agricultural colleges, and experiment stations have provided a vast amount of material that can be disseminated by radio. New developments in agriculture can be passed on quickly by radio. There are all types of agricultural broadcasts available in the midwest.

These include:

- (1) Talks by agricultural authorities.
- (2) Interviews with student farmers on new farming practices.
- (3) Two-person discussions of approved practices of farming.
- (4) Roundtable discussions of farm problems.
- (5) Timely tips on farm practices.
- (6) Agricultural quiz programs.
- (7) Farming problems of other countries.
- (8) Farm news — local and world-wide.
- (9) Debates on topics of current farm problems or practices.
- (10) Marketing information.

In most cases it would be easier to coordinate agricultural broadcasts with the classroom situation. The agriculture classroom program is generally of a flexible nature and can accommodate extras in the class plan.

Home economics is another field in which there are available

many programs over both commercial and educational stations. The nature of such programs are -- talks by home extension specialists, consumer information, home gardeners, nursing, health, family psychology, cooking, canning, and any of the many topics that concern the home.

An example of a guidance series is the series "Making Good", presented over the Indiana School of the Sky. These programs are aimed at helping young people in some of the confused programs they find themselves. The programs include such topics as self-analysis along lines of ability, interest, and achievement, maturity and adolescence, interests, aptitude for specific jobs, occupational survey, standard of living, prejudice, good work habits, vocational placement, leadership, academic record, activities, personality, behavior, duties, home life, and use of leisure time.

Activities that can be carried on in connection with a guidance broadcast are as follows: Each student could make a self-evaluation record. Have the students make a check list of the signs of maturity. An occupational survey could be made of the local community. Have the students compile a check-list of the characteristics needed for success. Invite a local businessman to class to discuss opportunities in the community. Aids for guidance broadcasts would include ability, aptitude, achievement and interest tests, and books on guidance.

## CHAPTER IV

## CONCLUSION

In drawing conclusions as to the best method of utilizing radio programs in the classroom it must be remembered that educational radio in the United States is in a period of transition. Interest in the application of radio to education is gaining momentum. The possible roads that educational radio can take are many. A few possibilities are: A federal network of educational stations, state networks of educational stations, state networks of educational FM stations, network of college and educational stations, a system of educational programs over commercial stations, complete federal control and coordination of educational radio broadcasting, regional networks of educational broadcasting, or any of a combination of these. Most of the present work in educational radio has been sporadic and isolated. But the consolidation movement is on. Consolidation will mean more standardization of programs, better programs, wider dissemination, more radio programs employed in the classroom, more radio-conscious school people, better utilization of educational radio in the school systems, and more standardization of audio aids in the schools.

The writer feels justified in drawing the four following conclusions.



(1) Educational radio can enrich classroom teaching. This is supported by the numerous examples given in Chapter III of the classroom use of radio; by the unlimited ways in which radio can be utilized by the teacher; by the large number of universities, colleges, and city school systems that have entered the field of education by radio; and by the support educational departments in various governments have given to this new medium of education.

(2) Radio can be utilized to an advantage in any subject. The writer has given in Chapter III examples of the use of educational radio in the fields of social adjustment, English and literature, science, fine arts, and vocational education. Some subjects are more conducive to use of radio than others but none are exempt.

(3) There are a great number of aids and activities that can be used in the classroom to improve the efficiency of educational radio. The writer lists in Chapter III for each field a number of these aids and activities.

(4) There is a great variety of equipment that can be used to present the radio programs to the class. The list of equipment given in Chapter II includes radios -- both AM and FM; recording devices as record cutters, wire recorders, tape recorders, and magnetic tape recorders; central sound systems; and record players.

On the teacher falls the major burden of adapting radio to the classroom. The students should be oriented and prepared by

the teacher before listening to an educational radio program. In "Suggestions to Teachers," beginning on page seven, the responsibility of the teacher can be seen to cover practically all the learning situation where radio is used. The teacher is responsible to see that all arrangements have been made prior to the broadcast. All conditions in the room should be conducive to good listening. Under Preparations Before the Broadcast and Following the Program, pages eight and nine, there are listed devices which the teacher can use to supplement and clarify the radio program. These devices include introductory materials, visual aids of all kinds -- maps, utilization guides, charts, specimens, models, films, and slides. The activities that can be carried on in connection with a broadcast are many and varied. Pages ten to twelve give an example of the many activities that can be carried on in connection with a single weather broadcast.

A summary of the responsibility of the teacher as given on pages twelve and thirteen are:

- (1) Picking programs to listen to .
- (2) Finding aids to be used.
- (3) Fitting the radio program in the regular work.
- (4) Creating proper attitude towards the broadcast.
- (5) Noting what preparation students should make.
- (6) Creating correct listening conditions.
- (7) Giving pupils needed assistance.
- (8) Merging programs with the school curriculum.

(9) Critical review of broadcast.

The duties of a Radio Coordinator would be modified by such conditions as equipment available; policy of administration toward use of radio programs; attitude, training, and experience of teachers in regard to use of educational radio programs; and accessibility of usable radio programs. Starting on page fourteen the following summation is made of the duties of a Radio Coordinator.

- (1) Determine the best methods of utilization of radio for the school.
- (2) Correlate the use of radio programs with other audio-visual aids.
- (3) Obtain accurate data on all available programs.
- (4) Evaluate all available programs.
- (5) Familiarize teachers with the programs and facilities available.
- (6) Survey the use of educational radio in other schools.
- (7) Recommend programs for in-school listening.
- (8) Assist teachers in the technical side of setting up and using equipment.
- (9) Obtain teacher's reaction and experiences and use as a guide for further use of in-school listening.

Student help can be utilized in a program for in-school listening. If the school has a central sound system, selected students can be trained to operate the controls and monitor programs as they are piped to classrooms. The following is a condensed code of rules for student central system operators taken

from "Code of Rules for Control Room Operators" starting on page sixteen.

- (1) Monitor every program from beginning to end.
- (2) Be prompt for duty and do not leave until relieved or services are no longer required.
- (3) Know the broadcast schedule of programs to be used.
- (4) Be sure programs reach the classroom at the beginning of the broadcast.
- (5) Cut off program as soon as it ends.
- (6) Check classroom reception to see if teachers are satisfied.
- (7) Refuse admission to pupils to the control room.
- (8) Do not handle equipment roughly.

Recording of broadcasts offer many possibilities as a good means of utilizing educational broadcasts. Especially is this true if the desired broadcast is not presented at the time the class is in session. The following summation of the advantages of recorded broadcasts is taken from the use of transcription play-backs in the classroom beginning on page twenty-seven.

- (1) A method of presenting timely and recent material.
- (2) Carries emotional impact of a broadcast.
- (3) Recordings and transcriptions are reusable and readily available.
- (4) Fit various educational programs -- as accelerated groups, retarded groups, make-up work.

- (5) Can bring the expert on given topics to the classroom.
- (6) Aids the instructor through variety, better motivation, easier preparation.

The possible uses of recorded broadcasts are many and varied. The teacher or the administrator can both add daily to the possible uses which this new tool of education can be exploited. This list of uses has been extracted and condensed from the discussion on play-back equipment on page twenty-eight.

- (1) Used in assemblies, faculty meetings, institutes, demonstrations, conferences, and banquets.
- (2) Used to assist gym teacher, drills, dances.
- (3) For speech-drama class, clubs, current events, "live history."

To adapt radio broadcasts to a specific class there are many devices and activities that can be used. The three courses which can utilize educational radio to the best advantage are English -- including literature, social science, and music. There is no class or subject that educational broadcasts would not enrich and expand the content.

#### Activities for Educational Radio Broadcasts

- (1) Have a bulletin board of related clippings.
- (2) Collect maps and pictures of topics covered.
- (3) Keep a class scrap book -- either geographical or events in news.
- (4) Encourage student written opinions on broadcast.

- (5) Dramatize important parts of broadcast.
- (6) Appoint committees to listen to programs for out-of-school listening.
- (7) Have the class collect pictures on subject covered in broadcast.
- (8) Play appropriate records either before or after broadcast.
- (9) Show related films or slide films either before or after broadcast.
- (10) Give reports on persons or topic to be covered in broadcast.
- (11) Compile a list of terms from broadcast.
- (12) Have class write resume' of broadcast.
- (13) Pick out quotations and ask who said them.
- (14) Have a discussion of leading characters.

The Ordinance of 1777 set the pattern for conserving part of our natural resources for the use of schools. It is only in line with this policy that a part of the airways should be used for educational purposes. On the FM band, education has a home of its own. Five channels immediately adjoining the thirty-five commercial channels are reserved for educational uses exclusively. These are excellent channels. There will be continuous pressure for commercial stations to take them over. The big question will be, can this pressure be held off long enough for educational institutions to become sufficiently interested to build educational broadcasting stations so as to properly utilize these five channels. The time

that is required for educators to become radio conscious will be a big element in determining the eventual effectiveness of radio in education. Foreward-looking educators is an essential to the proper application of radio. Without the insight of teachers and administrators into the possible uses of radio in education, radio will become another one of those grand ease aids to education that gather dust in the closet.

The biggest handicap to radio in education today is the lack of training of teachers and administrators in the means of utilization. Radio in education to many educators is a high-sounding phrase which leaves a big question-mark when it comes to application. The apathy of many educators to try something new is also another stumbling block. The traditional pattern set by some educators year after year is as impregnable as the Rock of Gibraltar. Most of our administrators today were trained in days before educational radio; hence, their conceptions on the uses of radio are limited.

Radio is simply another tool in the teacher's hand, just like the blackboard, map, and the motion picture projecture. In no case can radio supplant the teachers. Nor can it bolster up a poor teacher. On the contrary, it will require a good teacher with lots of ingenuity to employ radio to its greatest advantage. Radio will simply improve the efficiency of the learning situation. Efficiency is certainly something that is needed in all levels of education today. If radio can expand the breadth of learning,

enable those things learned to be retained longer, and still be a pleasant experience in the classroom, then it is surely worth some effort on the part of educators to see that it is employed properly in the schools.

One of the major problems today in educational radio is gearing educational broadcasts to the school curriculum in few systems is there any agency that controls both the broadcasting station and the classroom situation. Examples of control of both the classroom and the radio station are the public school broadcasting systems of the same large cities. Under this system the same broadcast can be presented several times to correspond with the class periods. The community of interest is small and the classroom aids to the broadcast can be disseminated in a short length of time. Also, the school administration is informed on radio utilization and helps the teacher to see that it is properly employed in the classroom. All the teachers use radio here so by a process of trial and error they can help each other out on advice and pitfalls to avoid. In these cities such as Cleveland and Chicago do we find educational radio employed the most efficiently today.

Commercial radio stations and networks have persistently ignored the educational possibilities of radio. Of the vast amount of program hours that are broadcast daily, very few are what could be remotely called educational. This condition brought



about the birth and growth of educational broadcasting. The part commercial broadcasting will play in educational radio tomorrow is a big question-mark. Most certainly commercial broadcasters will fight the growth of most educational networks that will take away listeners from their programs. Already there have been points of friction on this score. It is significant to note of the few educational programs presented by commercial stations and networks virtually all are unsponsored. This means that such programs are a drain on the station's finances. It seems that commercial radio's concept of the cultural level of the people is about the same as that of the motion picture industry.

The future of educational radio lies in FM. The reasons for this are several:

- (1) Five channels on the FM band have been set aside by the Federal Communications Commission for the exclusive use of education. There is no such home for educational radio on the AM band.
- (2) FM is virtually free of static and electrical interference. Thunder storms, generators, electric arcs, interfering stations do not mar FM reception as it does reception on AM radio sets in common use today.
- (3) More of what goes into the FM microphone comes out of the loud speaker. FM covers virtually the full range of sound of the ear while AM leaves out a considerable portion.

- (4) FM radio broadcasting transmitters are relatively inexpensive to install and to maintain.
- (5) Most new radio sets now put on the market are equipped to receive both AM and FM programs. Also, FM adapters can be purchased for AM sets.

Another factor favors the educational use of FM. Major Edwin H. Armstrong who is responsible for the development of FM and owns certain basic patents on FM is making this equipment available to educational FM stations for the nominal royalty of one dollar.

Educational organizations can play an important part in educating school people to the uses of radio. These organizations can also do much to encourage the wider dissemination of better educational radio programs. Organizations should have committees and staff members dedicated to the growth and development of educational radio.

In order for a school to properly employ radio in the classroom the administrator must have a basic knowledge of the composition of radio programs and methods of employing these in the classroom. An administrator who has little knowledge or interest in educational radio will certainly not encourage the use of radio in the classrooms of his school. Radio adds some new responsibilities to the administrator. The administrator should make sure that all the equipment used in radio utilization is not abused and is maintained in proper repair. This may call for special instruction of -

teachers in the proper use of such forms of equipment as transcribers, recorders, record players, central sound equipment, and radios. The administrator has to see the appropriate programs are used in each given classroom. If a central sound system is used the administrator can check by requiring previous notice of the time and program which is desired to be piped to the classroom.

#### Recommendations

It is suggested in the way of recommendations to school administrators that the following steps be taken in taking advantage of radio values for high school effectiveness:

- (1) Formulate a radio utilization program, making a survey of possible uses in that given school situation.
- (2) Purchase the necessary equipment to carry on the radio utilization program.
- (3) Appointment of a radio coordinator to head the radio utilization program.
- (4) Instruct the teachers in the use and maintenance of all radio utilization equipment.

#### Radio Coordinator:

To the Radio Coordinator, the person who will be responsible for the effective use of educational broadcasts, the following recommendations are given:

- (1) Take charge of maintenance, repair, and use of equipment. Help teachers set up and ready equipment for classroom use.
- (2) Have available information on all possible radio programs of educational value. This would include schedules of programs for networks, commercial, and educational stations; utilization guides, bulletins, and synopsis of programs.
- (3) Keep teachers informed on programs available in their field. Work out schedules of programs with teachers.
- (4) Take charge of recording and transcribing programs making sure that the programs are of sufficient quality to warrant transcription.
- (5) Maintain a schedule for using equipment and thus prevent conflicts. This includes utilization of central sound systems.
- (6) Subscribe to the Service Bulletin of the Federal Radio Education Committee and The Journal of the Association for Education by Radio.
- (7) Check teachers on effectiveness of programs used using this information as a guide to future programs to be used. Forms can be used for this.

Teacher:

To the teacher, who in the last analysis must employ the radio broadcast in his or her classroom, these recommendations

are suggested:

- (1) Keep informed on the programs available in your special field.
- (2) Know the different ways in which radio can be employed in the classroom.
- (3) In cooperation with the radio coordinator, select programs to be transcribed.
- (4) Inform the radio coordinator as to quality and effectiveness of a program after it is used.
- (5) Have available utilization guides and bulletins to the program to be used.
- (6) Give each program a proper introduction pointing out points to listen for.
- (7) After the program, discuss the points of importance and show how the program fits that given subject and how it affects the student.
- (8) Know the activities that can be carried on with the program.

This newest tool to educators, educational radio, is not without its problems. There are:

- (1) Inflexibility of radio broadcast schedules.
- (2) Inability of educational stations to reuse material from commercial stations.
- (3) Cost of equipment.
- (4) Local interference and static.

- (5) Training of administrators, teachers, operators, and students in methods of utilization of educational broadcasts.

The use of educational broadcasts in the classroom has been limited because it does not fit the traditional educational pattern of the classroom. It is a medium that does not confine the educational experience of the students to the four walls of the classroom. Nor is it bound to the narrow concepts of a textbook or lesson plan. It is a dynamic type of education to fit a dynamic culture such as ours. It is not limited by boundaries or space. Its only limits are those limits of imagination of the people who exploit the educational advantages of radio. Educational broadcast is a tool which just now is finding a place in the vast American educational pattern.



LIST OF STANDARD (AM) AND FM EDUCATIONAL  
RADIO STATIONS BY STATE

<u>State and City</u>	<u>Call Letters</u>	<u>Freq.</u>	<u>Licensee</u>
Alabama			
Tuscaloosa	WUOA (FM)	91.7	Univ. of Alabama
Arkansas			
Siloam Springs	KUOA (AM)	1290	John Brown Univ.
	KUOA (FM)	105.7	
California			
Los Angeles	KUSC (FM)	91.5	Univ. of S. Calif.
San Diego	KSDS (FM)	91.7	San Diego Unified School Dist.
San Francisco	KALW (FM)	91.7	Board of Ed. of San Francisco
Santa Monica	KCRW (FM)	89.9	Santa Monica Sch. Bd.
Stockton	KCVN (FM)	91.3	College of the Pacific
Florida			
Gaineville	WRUF (AM)	850	Univ. of Florida
Miami	WTHS (FM)	91.7	Technical H.S.
Georgia			
Atlanta	WABE (FM)	90.1	Bd. of Educ. Atlanta
	WGST (AM)	920	Ga.Sch. of Tech.
	WGST (FM)	94.1	
Illinois			
Chicago	WBEZ (FM)	91.5	Bd. of Educ. Chicago
	WCTF (FM)	89.9	Chicago Theo. Sem.



## (Illinois Continued)

Urbana	WILL (AM)	580	Univ. of Ill.
	WIUC (FM)	91.7	Univ. of Ill.
Indiana			
Bloomington	WFIU (FM)	90	Ind. Univ.
Lafayette	WBAA (AM)	920	Purdue Univ.
Iowa			
Ames	WOI (AM)	640	Iowa State Col.
	WOI (FM)	91.3	
Boone	KFGQ (AM)	1260	Boone Biblical Col.
Decorah	KWLC (AM)	1240	Luther College
Iowa City	WSUI (AM)	910	The State Univ. of Iowa
	KSUI (FM)	91.7	The State Univ. of Iowa
Kansas			
Lawrence	KFKU (AM)	1250	Univ. of Kansas
Manhattan	KSAC (AM)	580	Kansas State Col.
Kentucky			
Beattyville	WBKY (FM)	91.3	Univ. of Ky.
Louisiana			
Baton Rouge	WLSU (FM)	91.7	Louisiana State Univ.
New Orleans	WWL (AM)	870	Loyola Univ.
	WWLH (FM)	100.3	Loyola Univ.
Michigan			
Ann Arbor	WUOM (FM)	91.7	Univ. of Mich.
Detroit	WDTR (FM)	90	Bd. of Educ. Detroit
East Lansing	WKAR (AM)	890	Mich. State College
	WKAR (FM)	90.5	

## Minnesota

Minneapolis	KUOM (AM)	770	Univ. of Minn.
Northfield	WCAL (AM)	770	St. Olaf Col.

## Missouri

St. Louis	KSLH (FM)	91.5	Bd. of Educ. St. Louis
	WEW (AM)	700	St. Louis Univ.
	WEW (FM)	95.1	

## New Jersey

Newark	WBGO (FM)	91.1	Bd. of Educ., Newark
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## New York

Brooklyn	WNYE (FM)	91.5	Bd. of Edu., N. Y.
Floral Park	WSHS (FM)	90.3	Bd. of Educ., Sewan- haka High School
Ithaca	WHCU (AM)	870	Cornell Univ.
	WHCU (FM)	97.3	
New York	WFUV (FM)	90.7	Fordham Univ.
Troy	WHAZ (AM)	1330	Rensselaer Polytechnic Institute

## North Dakota

Grand Forks	KFJM (AM)	1440	Univ. of N. Dak.
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## Ohio

Cleveland	WBOE (FM)	90.3	Bd. of Edu. Cleveland
Columbus	WOSU (AM)	820	Ohio State Univ.
Toledo	WTDS (FM)	91.3	Bd. of Educ. Toledo

## Oklahoma

Norman	WNAD (AM)	640	Univ. of Okla.
	KOKU (FM)	90	State Univ. of Okla.
Stillwater	KOAG (AM)	840	Okla. Agri. & Mech. Col.
	KOAG (FM)	91.7	

## (Oklahoma Continued)

Tulsa	KWGS (FM)	90.5	Univ. of Tulsa
Oregon			
Corvallis	KOAC (AM)	550	Oreg. St. Agri. College
Eugene	KRVM (FM)	90.1	Oreg. St. Agri. College
Portland	KBPS (AM)	1450	Portland Public Sch.
Pennsylvania			
Grove City	WSAJ (AM)	1340	Grove City Col.
Philadelphia	WJUN (FM)	91.7	Junto, Inc.
Rhode Island			
Providence	WPTL (FM)	91.5	Providence Bible Inst.
South Dakota			
Rapid City	WCAT (AM)	1230	S. Dak. Sch. of Mines
Vermillion	KUSD (AM)	920	Univ. of S. Dak.
Tennessee			
Memphis	WHBQ (AM)	1400	Harding College
Texas			
College Station	WYAW (AM)	1150	The Agri. and Mech. Col. of Texas
	KAMT (FM)	94.5	
El Paso	KIDE (FM)	91.7	The Independent Sch. Dist. of El Paso
Houston	KUHF (FM)	91.7	Univ. of Houston
Port Arthur	KPAC (AM)	1250	Port Arthur Col.
	KPAC (FM)	101.9	
Waco	KWBU (AM)	1030	Baylor Univ.

## Washington

Pullman	KWSC (AM)	1250	State Col. of Wash.
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## Wisconsin

Madison	WHA (FM)	91.5	State of Wisc. Radio Council
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	WHA (AM)	970	Univ. of Wisc.
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Chilton	WHKW (FM)	89.9	State of Wisc. Radio Council
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Delafield	WHAD (FM)	90.7	State of Wisc. Radio Council
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Wausau	WHSF (FM)	89.1	State of Wisc. Radio Council
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Stevens Point	WLBL (AM)	930	State of Wisc. Dept. of Agri.
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