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A survey of techniques in the use of projected audio-visual teaching aids in twelve selected schools

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A SURVEY OF TECHNIQUES

in the use of

PROJECTED AUDIO-VISUAL TEACHING AIDS

in

TWELVE SELECTED SCHOOLS

by

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CHAPTER I

THE PROBLEM, ITS IMPORTANCE, AND DEFINITION OF TERMS USED

In recent years, there has been an increasing amount of attention centered on the public school audio-visual program, with the broad aim of raising the status of audio-visual teaching aids from the role of an extra or frill to the position of a universally accepted tool of the teaching profession. Thus far, the large schools have received most of the attention and the investigations have dealt sparingly with many problems peculiar to the small Montana school. In an attempt to overcome this shortcoming, twelve small schools were selected in Lake, Mineral, Missoula, and Sanders Counties in the State of Montana for this inquiry into the present status of methods in audio-visual education. By so limiting the scope of this study, the conditions in the small schools could be more adequately investigated.

I. THE PROBLEM

The purpose of this study was (1) to evaluate the administrative organization of the audio-visual programs in the schools being surveyed; (2) to compare instructional techniques used by teachers in presenting projected audio-visual teaching aids with techniques judged by authorities to be the most effective; (3) to discover to what extent

teachers have been trained in the use of audio-visual teaching aids; and (4) to make specific recommendations to the schools surveyed leading towards more effective audio-visual programs.

In order that this study might examine in considerable detail the administration and use of audio-visual materials and make specific recommendations to the schools concerned, certain limits were placed on the scope of the inquiry. First, the survey was restricted to twelve small schools having enrollments between forty and two hundred and fifty students in grades seven through twelve.[1] Second, only projected audio-visual teaching aids were considered; namely, the motion picture projector, the stripfilm projector, the slide projector (or slide attachment), and the opaque projector. These teaching aids were selected for study because they were relatively less expensive than other more specialized projection equipment and could be effectively used in all phases of the instructional program of the school. It was felt, in addition, that each school would already have had some experience with at least one of these projection devices and would profit most from information concerning equipment that they had used.

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[1]The schools surveyed were Alberton, Arlee, Charlo, Dixon, Frenchtown, Hot Springs, Noxon, Plains, St. Regis, St. Ignatius, Superior, and Thompson Falls.

Dale[2] has pointed out one of the most serious criticisms that can be leveled against present day teaching methods: meaningless verbalism. This problem demands a workable solution and only a beginning has been made in alleviating the situation by the increased use of vicarious experience through projected teaching aids. As the potentialities of projected audio-visual teaching aids are not being fully realized, more study is needed to increase the effectiveness of their use, especially in the small high school. With limited resources and small teaching staffs, the urgency of increasing the effectiveness of instruction in these small schools is doubly important. Enrollment, and the bulk and complexity of the information to be imparted is growing year by year, with little or no prospect of an increase in the already overburdened teaching staffs. So it becomes necessary to direct attention to means whereby instruction may be carried on more efficiently and economically. In this study, an attempt was made to show how instruction can be made more effective and economical by intelligent use of projected audio-visual teaching aids.

II. DEFINITION OF TERMS USED

Projected teaching aids. The term, projected teaching

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[2]Edgar Dale, Audio-Visual Methods in Teaching (New York: The Dryden Press, 1946), p. 16.

aids, as used herein, is interpreted as referring to motion picture projectors, stripfilm projectors, slide projectors or slide attachments, and opaque projectors. Other pieces of more specialized projection equipment may rightfully be classified in this grouping; however, as most of the schools surveyed did not possess any of this specialized equipment nor intend to acquire it in the near future, no advantage seemed apparent in including it in the analysis of the problem.

Small school. For the purposes of this survey,a small school is considered to be one having enrolled in grades seven through twelve not more than two hundred and fifty pupils. This definition is necessary in order to achieve clarity of an expression that enjoys a wide divergence of meaning.

Motion picture projector. A motion picture projector is defined as an optical device utilizing a powerful source of light and a system of lenses to project upon a screen a series of magnified pictures. These pictures, appearing in rapid succession, approximate the natural movements of the subject; and, when accompanied by sound, produce the effect of reality. The sound motion picture projector will in most cases project either the sound or silent film, and the term as used in this paper indicates such dual action unless

otherwise noted. All projectors covered in this survey are 16-mm, although both larger and smaller models are available on the market.

Stripfilm projector. The stripfilm projector (also called slidefilm, filmstrip, or film slide) is considered to be any of the 35-mm projectors that are capable of also projecting 2 x 2 slides through the use of a special attachment fitted in behind the lens system.

Standard slide projector. This device is the oldest in use in the public schools. Also called the standard lantern, it projects 3 1/4 x 4 inch glass slides and is notable for its simplicity of operation.

Opaque projector. The opaque projector shall be considered a machine employing reflecting surfaces and a lens system to project flat materials, such as pages from books and magazines, upon a screen. Most opaque projectors are equipped with an attachment for showing 3 1/4 x 4 inch glass slides.

CHAPTER II

ORGANIZATION OF THE PAPER AND REVIEW OF THE LITERATURE

To treat more precisely the problem being studied, classification and organization of the material relating to the problem was necessary. The object in planning the organization was to group the information (1) to best present the background of the problem and review the previous research; (2) to review the present status of the problem in the area being studied; (3) to set forth standards, the achievement of which would represent a solution to the problem; and (4) to summarize the findings and make recommendations.

I. ORGANIZATION OF THE PAPER

In accordance with the preceding objectives, this study is divided into four sections: the introduction, the compilation of the survey data, the analysis of the literature, and conclusions and recommendations. The introduction, Chapters I, II, and III, takes up a statement of the problem, its importance to the schools and to the individual teacher, the organization of the paper, a review of the literature, the sources of data, and the procedure used in treating the findings. In Chapters IV and V, the data collected through the interview check-list and the questionnaire are compiled.

This compilation follows a plan designed to emphasize the most important considerations and to invite comparison with the analysis of the literature as presented in later chapters. The third section, Chapters VI, VII, and VIII, investigates authoritative opinions and experimental findings, as evidenced in books, periodicals, and bulletins, attempting to bring together a body of vital and reliable material to serve as a basis for the evaluation of the schools being studied. Finally, a comparison is made, in Chapter IX, between this body of reliable material and the conditions as they exist in the schools surveyed. From this comparison, conclusions are drawn. In addition, recommendations are made based on these conclusions which seem justifiable, yet unpresumptious, in view of the resources of the schools and the possible need for changes in their audio-visual programs.

II. REVIEW OF THE LITERATURE

The written record of the development of the audio-visual program since its inception in the public schools is voluminous. The administration of the program, the equipment and facilities needed, the most effective instructional techniques, and the training of teachers have all been widely discussed on a plane applicable to the larger school and their ample budgets. Both state and nationwide studies have been made, but much of this material cannot be applied to

the small schools under study. Therefore, the analysis
which follows attempts only to present a limited review of
these writings, more especially those which deal with mater-
ials applicable to the small school situation.

Of the nationwide studies made in recent years, the
National Education Association's investigation of the audio-
visual practices in certain cities is typical.[3] This ques-
tionnaire study made comparisons among groups of schools
listed according to the populations of the cities in which
they were located. It is significant to note that the
smallest group listed included schools in cities with popula-
tions ranging from two thousand five hundred to five thou-
sand. Obviously, such a basis is not entirely adequate if
recommendations were to be made for the small Montana schools
in communities ranging from a few hundred to about one
thousand in population. However, this survey did bring out
several significant points which were worthy of attention in
any school system. These points were:

1. Approximately seventy-five per cent of the
teachers in smaller schools felt that their
audio-visual program was inadequate.

2. The fields of science and social science made
most use of projected audio-visual aids, while
the field of mathematics was exceptionally low
in use.

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[3]Research Bulletin of the National Education Associa-
tion, Vol. XXIV, No. 4 (Washington, D.C., 1946).

3. The greatest barrier to the extended use of audio-visual teaching aids was the lack of interest on the part of teachers, and the least common cause of opposition was administrative apathy.

4. Most schools had yearly per pupil costs for their audio-visual expenditures below twenty-four cents.

The National Society for the Study of Education also investigated this problem.[4] This symposium revealed research materials gathered from many sources and integrated them into an understandable sequence of ideas. The psychology of learning, the teacher's role, administration, the role of various projected aids, the curriculum, teacher training, equipment and facilities, and teaching techniques were viewed in the prospective of their relation to audio-visual instruction.

Several statewide studies have also been conducted in recent years, each containing some necessary duplication while also addressing themselves to the specific problems of the state being investigated. A survey of Illinois[5] was made in 1938 which attempted to evaluate the status of instruction by projected teaching aids. In 1939 a survey of Georgia[6] was conducted which investigated teacher's preference as to

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[4]Nelson B. Henry, editor, Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949).

[5]Alvin Roberts, "Status of Visual Instruction by Projection in Illinois," Education Screen, XVII (June, 1938), 197-99.

[6]J. C. Wardlaw, "A Questionnaire Survey of Georgia," Education Screen, XVIII (October, 1939), 282-83.

subjects for new educational films and the comparative use of various visual aids. Frank[7] examined the audio-visual problem in Montana in 1947 through his questionnaire study. In this work Frank's evaluation appeared somewhat superficial in that he indicated that certain practices were either good or bad, used or not used, while not giving sufficiently detailed information on how these practices might be corrected or initiated, as the case required. This study, therefore, invited supplementary considerations on points that would be of particular help to an individual teacher or administrator in developing new instructional techniques or revitalizing an audio-visual program.

In general, all material reviewed was deemed to lack the specific nature necessary to satisfy the intentions of this paper, namely, to present a body of information that would be of use to administrators and teachers in carrying out their educational missions.

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[7]Charles L. Frank, "A Survey of the Use of Projected Visual Aids in the Public Schools of Montana," (unpublished Master's thesis, Montana State University, Missoula, 1947).

CHAPTER III

SOURCES OF DATA AND TREATMENT OF THE FINDINGS

The data used in this study were derived from sources
that, upon critical consideration, seemed most likely to af-
ford accurate information and to present each phase of the
problem most clearly. Every effort was made to eliminate
unsubstantiated opinions and uncertain conclusions appearing
in the literature reviewed in an attempt to provide a reliable
basis for the development of this problem study.

I. SOURCES OF DATA

The sources of data employed in this study were
classified in two groups: first, those which presented the
conditions prevailing in the schools studied, and second,
those which outlined an improved program of audio-visual
techniques for these schools. The information in the first
grouping was obtained through the use of an interview check-
list and a questionnaire. The interview check-list was used
in conjunction with the questionnaire in order to overcome
certain shortcomings inherent in studies carried out solely
through the questionnaire technique. In this connection
Good, Barr, and Scates[1] pointed out, "By means of the inter-

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[1]Carter V. Good, A. S. Barr, and Douglas E. Scates,
The Methodology of Educational Research (New York: Appleton-
Century-Crofts, Inc., 1941), p. 378.

view it is possible to secure many data that cannot be obtained through the less personal procedures of distributing a reply blank."

In the preparation of these research devices, the information sought was divided into two parts with the aim of seeking answers to particular questions from those most able to provide accurate data. The interview check-list was concerned with administration, school equipment and facilities for audio-visual education, budget, and care and maintenance of audio-visual apparatus. The questionnaire, on the other hand, solicited information concerning teacher attitude towards audio-visual aids, classroom techniques, extent of classroom use, and the status of teacher training in the use of audio-visual aids. To this end, the interview check-list was used as a guide for personal interviews with superintendents, while the questionnaire was filled out by the teachers under the direction of the superintendents.

The per cent of returns of the interview check-list and questionnaire was exceptionally high due to the intimate contact with each school concerned. This high rate of return further justified the relatively small sample investigated in addition to the consideration that this paper was intended primarily as a practical problem concerning the area surveyed. An interview check-list was completed for each of the twelve schools, and seventy-four out of eighty-seven

teachers returned questionnaires. This represented a return
of eighty-five per cent. The fifteen per cent of teachers
who failed to respond indicated that they declined either
because of little experience in using audio-visual aids, or
a lack of interest in the matter. However, the return re-
ceived was considered completely adequate for the purposes
of this study.

The information concerning approved techniques in
audio-visual procedure was secured from an analysis of books,
periodicals, and bulletins. Particular stress was placed
upon the National Education Association's study and upon the
periodical, Education Screen, as both represented current
and authoritative viewpoints on the audio-visual problem.
Suggested techniques were criticized on the basis of frequency
of mention, apparent validity of the substantiating material,
and the applicability to the small school situation.

II. TREATMENT OF THE FINDINGS

In tabulating the data received from the interview
check-list and questionnaire, the general structure of the
two forms was followed. In this manner, the data were kept
in context, facilitating analysis and comparison carried out
in later chapters. The data secured from books, periodicals,
and bulletins were presented in chapters on administrative
procedure, standards for equipment and facilities, and

teaching techniques. Based on these two groups of material, comparisons were made between existing conditions and recommended practices. Subsequently, conclusions were drawn which attempted to evaluate the administrative and educational phases of the problem, as set forth in Chapter I, and to make certain recommendations which were felt to be at least a partial solution to the problem. These recommendations were formulated with the principle in mind that they should be consistent with the abilities of the schools to put them into practice.

CHAPTER IV

THE REPORT ON AUDIO-VISUAL EDUCATION BY ADMINISTRATORS

The interview check-list was used to obtain the information reviewed in this chapter. Prior to sending out the interview check-lists, each school concerned was contacted requesting permission to make the survey. Even though cooperating in this survey meant extra work for each administrator, the support of each school was readily obtained, and the interview check-lists were mailed out. The mailing of the forms took place several weeks in advance of the anticipated visits to the schools in order that the superintendents would have an opportunity to study the check-lists at their convenience and be better prepared to supply the information desired.

Each school was visited, at which time the interview check-list was filled out and discussed with the superintendent. Any additional information offered was noted and the school's audio-visual equipment and facilities were examined.

The information reviewed was presented in the most concise manner possible, using two main divisions: administrative practices, and equipment and facilities.

I. ADMINISTRATIVE PRACTICES

The schools ranged in enrollment from forty-eight to two hundred and thirty-six, the smallest having four teachers and the largest having eleven teachers. The average enrollment of the twelve schools was one hundred and six students, and therefore, the general classification of small school was used.

Audio-visual finance. Of the schools reporting, three reported that no provision was made in the regular school budget for audio-visual program support, while nine schools reported a definite budget provision. However, the per cent of the budget set aside for audio-visual purposes was very small, ranging from two tenths of one per cent to nine tenths of one per cent. As these figures were admittedly approximate, it can only be stated that apparently less than one per cent of the budgets investigated was used for audio-visual purposes.

Administrative personnel. One person coordinated the audio-visual program in nine of the twelve schools reporting, as shown in Table I. This table also shows that four of the nine coordinators were released from some teaching duties to compensate for their extra work, but that none received any extra salary in recognition of their position. Table II is

TABLE I

STATUS OF THE AUDIO-VISUAL COORDINATOR

Question concerning the status of the audio-visual coordinator	Yes	No
Does one person coordinate the entire audio-visual program in your school?	9	3
Is the coordinator released from some teaching duties to compensate for the extra work?	4	5
Is any extra salary attached to the position of audio-visual coordinator?	0	9

TABLE II

FACULTY POSITION HELD BY AUDIO-VISUAL COORDINATOR

Faculty position held	Times reported
Superintendent or principal	6
Math and science teacher	2
Commercial teacher	1

self explanatory in designating the faculty position held by the various coordinators. The duties performed by the co-ordinators are summarized in Table III, indicating that the three most frequent responsibilities of the coordinator were ordering and delivering materials, training student operators, and carrying out an in-service training program for the teachers.

Teacher training. Six schools reported some form of in-service training program and six schools reported no attempt made at all. The methods used to carry out this program are shown in Table IV. Some schools used more than one approach, with teachers meetings and individual instruction being the techniques most frequently employed. Individual training in audio-visual techniques through college courses was reported by sixteen teachers, or twenty-one per cent. Audio-visual training received, as part of a college course, was reported by thirty-six teachers, or forty-nine per cent.

Student participation. Only one school reported that the students were organized into an audio-visual club, but nine schools used students as projectionists. In each case, where student projectionists were used they had received some training in the operation and care of projection equipment. Two schools selected student projectionists from all grades (seven through twelve), and in six schools student projection-

TABLE III

DUTIES OF THE AUDIO-VISUAL COORDINATOR

Duties performed by coordinator	Times reported
Aid teacher in the selection of audio-visual materials	2
Order and deliver audio-visual materials	7
Train teachers in audio-visual techniques	6
Train student operators	9
Repair audio-visual projection equipment	2

TABLE IV

METHODS USED TO CARRY OUT IN-SERVICE AUDIO-VISUAL TRAINING PROGRAM

Training device used	Times reported
Teachers meetings	5
Special classes	2
Individual instruction	3

ists operated on a schedule.

Provisions for publicity and insurance. School news-
papers were the most used medium for publicizing the audio-
visual program. Nine schools reported the school newspaper
being used for this purpose, two schools reported the use of
the local newspaper, and five schools said that the local
P.T.A. organization was also used. The insuring of audio-
visual materials when they were returned to the lender was
done by five schools, three by parcel post insurance and two
by Railway Express.

Sources of audio-visual materials. The sources of
projected audio-visual materials, as tabulated in Table V,
indicated an overwhelming reliance on the Montana State Film
Library for materials. Free sponsored films were used to a
considerable extent and rental films very little. The pur-
chase of films was restricted to each school's contribution
to the Montana State Film Library. The stripfilms used in
all cases, except one, were purchased by the using school, as
was also the case with slides.

Audio-visual problems. Problems arising from the use
of audio-visual teaching aids are reported in Table VI. This
summary shows that proper ventilation of the classroom during
showings was considered one of the major problems along with

TABLE V

SOURCES OF AUDIO-VISUAL MATERIALS

Source	Number of films	Number of strip films	Number of slides
Montana State Film Library	1105	0	0
Free sponsored materials	94	5	0
Rental materials	15	10	0
Purchased materials*	0	94	25

*Other than films donated to the Montana State Film Library

TABLE VI

PROBLEMS ARISING FROM THE USE OF AUDIO-
VISUAL TEACHING AIDS

Problems	Times reported	
	Serious	Less serious
Proper ventilation of classrooms during viewing	2	7
Interference with other classes	1	3
Adequate darkening of classrooms	0	4
Mobility of projection equipment	1	5
Storage space for projection equipment	1	3
Emergency repairs of breakdowns requiring a skilled technician	0	2
Difficulty in operating the projection equipment	2	2
Difficulty in securing desired materials at the desired time	3	6

the difficulty in securing desired materials at the proper
time. Six other problems were each reported several times,
indicating that there is work to be done in perfecting the
existing audio-visual programs.

II. AUDIO-VISUAL EQUIPMENT AND FACILITIES

Projection room and storage facilities. For projec-
tion purposes, nine schools used a central room, although
four of these schools alternated with one or more darkened
classrooms. However, the tendency was definitely towards
moving the students to a central projection room for viewing
rather than viewing in the regular classroom. Table VII
lists the twelve schools surveyed, by number only, and sum-
marized the status of dark room facilities. For storage
facilities eight schools reported that a single central storage
room was used and four reported no specific provisions
were made.

Audio-visual equipment and materials owned. The
amount and type of audio-visual projection equipment owned
are shown in Table VIII. This tabulation indicated a major
stress on 16-mm sound motion pictures while the second most
frequently owned piece of audio-visual equipment was the
stripfilm projector. The standard lantern was not reported
in any of the check-lists. The audio-visual projection

TABLE VII

PROJECTION ROOM FACILITIES

School	Number of classrooms	Number of classrooms that can be darkened	Number of classrooms used at least once a month	Central projection room used
1	11	2	1	Yes
2	7	4	2	No
3	5	1	0	Yes
4	5	1	0	Yes
5	5	2	1	No
6	6	0	0	Yes
7	8	0	0	Yes
8	10	4	4	Yes
9	11	1	1	Yes
10	5	1	1	Yes
11	4	1	0	Yes
12	9	1	1	No

TABLE VIII

PROJECTION EQUIPMENT OWNED

Item of equipment	Number of schools owning	Number of pieces owned
Projector, motion picture, 16-mm, sound	12	13
Projector, stripfilm, w/ 2 x 2 slide attachment	8	8
Projector, opaque, w/ 3 1/4 x 4 slide attachment	2	2
Projector, glass slide, 3 1/4 x 4	0	0
Screen, stationary	9	10
Screen, portable	8	10

materials owned by the schools were 16-mm sound films,
stripfilms, 3-1/4 x 4 inch glass slides, and 2 x 2 slides.
Table IX indicates the amount and distribution.

Operation of projection equipment. The matter of ef-
ficiency in operating procedure was a difficult quantity to
measure with any degree of accuracy. To state categorically
how rapidly an operator should be able to thread a given
motion picture projector, or how inconspicuous the operator
should be in carrying out his other duties appeared to be a
questionable undertaking. However, the report of nine
schools indicating that some training was given to projec-
tionists and the evidence of schedules for duty in six
schools showed some concern for this problem in the minds of
the administrators.

Maintenance of projection equipment. Interruption of
the scheduled audio-visual program due to failure of the pro-
jection equipment was reported by only one school. The cause
of the breakdown in this case was mechanical failure of the
machine. However, two schools reported minor interruptions
due to poor films. Provisions for repair of projection equip-
ment, as shown in Table X, was in nine cases made through an
outside repair service, while one school had local skilled
workmen, and two schools had teachers capable of doing all
but the most difficult repair job. All schools kept certain

TABLE IX

AUDIO-VISUAL MATERIALS OWNED

Item of equipment	Number of schools owning	Number of items owned
Film, 16-mm, sound	1	2
Stripfilm, 35-mm	8	296
Slide, glass, 3 1/4 x 4	3	150
Slide, kodachrome	1	200

TABLE X

PROVISIONS FOR REPAIR OF AUDIO-VISUAL EQUIPMENT

Agency performing the repair service	Times reported
A faculty member	2
A local repair service	1
An outside repair service	9

easily replaceable spare parts on hand. Projection lamps and fuses were reported by all schools while tubes and photo-electric cells were reported by less than half the schools. Any definite statement on this matter was impossible due to the lack of certainty on the part of some schools as to exactly what parts were on hand if the time should be taken to look for them.

CHAPTER V

THE REPORT ON AUDIO-VISUAL EDUCATION BY TEACHERS

The information compiled in this chapter was obtained through the use of a questionnaire distributed to all teachers in grades seven through twelve in the schools surveyed. In most cases, there was no personal contact with the respondents, although the superintendents passed along to their teachers suggestions for filling out the questionnaire form. The questionnaire sought to discover what audio-visual practices were being used by the teachers and what their opinions were concerning audio-visual aids in teaching. In tabulating the data received, a summary of the teachers' opinions was placed first, followed by a review of audio-visual practices under the headings of selection of materials, preparation for use, techniques during use, and follow-up and evaluation.

Because some teachers had little, if any, experience with audio-visual teaching aids, many questions were left unanswered on the questionnaires returned. This practice was encouraged in an effort to procure as accurate a picture as possible of the audio-visual situation. It was felt that if teachers attempted answers to questions for which they had little basis for answers, it would only tend to make the study less valid. Therefore, in tabulating the results of

the questionnaire no other significance was attached to unanswered questions and they were not included in the results shown. Where totals or percentages do not correspond with total returns or one hundred per cent, the discrepancies were reconciled by assuming that the fraction not accounted for had no basis for an answer.

I. TEACHERS' OPINIONS ON AUDIO-VISUAL USE

In response to the question, "Do you think extended use of audio-visual teaching aids would improve your classroom procedure sufficiently to justify the extra time and effort?," sixty teachers answered in the affirmative and fourteen in the negative. When asked if they thought special training was necessary in order to use audio-visual aids effectively, sixty teachers reported that they did and fourteen that they did not. An interest in participating in an inservice training program, if one was started in their school, was evidenced by sixty-three teachers; while eleven teachers said they would not be interested. In summarizing, it appeared that eighty-one per cent felt increased use of audiovisual materials would improve their classroom procedure, and that eighty-five per cent were interested in participating in an in-service training program.

Table XI, page 32, shows the reaction of teachers to the question, "Which reasons keep you from using more

projected teaching aids?" Here, the overwhelming majority
of replies listed difficulty in getting the desired material
at the right time as the major deterrent to extended use.

II.   SELECTION OF AUDIO-VISUAL MATERIALS

Each school reported that all teachers who used pro-
jected teaching aids were active in selecting their mater-
ials.   Three schools indicated that their teachers made
selections without reference to any central agency, such as
the coordinator.   Most frequent practice, however, was for
the teachers to make requests for materials through the co-
ordinator, in order to avoid duplications.   In the matter of
selecting materials fitted to the educational level of the
learner, it was found that fifty-nine teachers were making a
definite attempt, while three teachers gave the matter little
consideration.   The using of audio-visual materials that be-
come available when the subject content was not applicable
to the current lesson was practiced by fifty-two teachers,
while nine said they did not.

III.   PREPARATION FOR VIEWING

Previewing of projected teaching aids was done in
thirty-two out of sixty-five cases reported, or fifty per
cent.   However, as teacher's guides and other descriptive
material were sometimes available, those reporting in the

affirmative did not necessarily preview all materials they used. It was intended that the question should differentiate between those who made an effort to discover what the subject content of a teaching aid was, before showing, and those who depended entirely upon follow-up activities to supplement learning. The methods used to prepare students for viewing are reviewed in Table XII. Group discussions and reviewing concepts presented in the teaching aid were most frequently used and the device of a pre-quiz was almost entirely ignored. The technique of giving the students a particular objective to be gained from viewing a projected teaching aid was employed by forty-six, or sixty-one per cent, of the teachers. The instruction of students in how to gain the most from projected teaching aids was attempted by fifty-nine teachers, or seventy-nine per cent.

IV. AUDIO-VISUAL USE

The question pertaining to purposes for which audio-visual teaching aids were used indicated that most teachers considered them best used as supplementary material. Approximately the same emphasis was placed on use as introductory material and as material for summarizing, as shown in Table XIII, page 34. Class participation during viewing of stripfilms and slides was encouraged by thirty-seven teachers, or fifty per cent. Re-showing of projected teaching aids to

TABLE XI

REASONS GIVEN FOR LIMITING THE USE OF PROJECTED
TEACHING AIDS

Reason given	Per Cent	Times reported
Difficulty in operating the equipment, or getting someone to operate it for you.	5.5	4
Difficulty in moving and setting up the equipment	10.8	8
Do not have the time to use projected teaching aids	10.8	8
Cannot get appropriate materials at the right time	63.5	47

TABLE XII

METHODS USED TO PREPARE STUDENTS FOR VIEWING
PROJECTED TEACHING AIDS

Method	Per cent	Times reported
Group discussion	60.8	45
Pre-quiz	4.0	3
Providing a list of "things to look for"	36.5	27
Reviewing concepts presented in the teaching aid	47.3	35

emphasize a point or clear up a misconception was done by thirty-eight teachers, or fifty per cent.

V. FOLLOW-UP AND EVALUATION

The most used follow-up procedure was group discussion. Quizzes were used more frequently than in preparation activities, and summarizing by the teachers was also much used. Table XIV summarizes this data. An attempt was made by forty-six teachers, or sixty-two per cent, to elaborate on materials presented in projected teaching aids in an effort to supply detail often left out of films and stripfilms.

The evaluation process appeared in most cases to be an incidental result of pupil-teacher comments on the teaching aid. However, Alberton did provide a film review sheet which allowed for remarks on the useability of a film or stripfilm.

VI. SUBJECT AREAS OF AUDIO-VISUAL USE

The subject areas in which audio-visual materials were used are tabulated in Table XV. This table shows a major emphasis in the fields of science and social science, with least use apparent in the fields of mathematics, commercial, and industrial arts.

TABLE XIII

PURPOSE FOR WHICH PROJECTED TEACHING AIDS WERE USED

Purpose for which used	Per cent	Times reported
To introduce new material	32.4	24
As supplementary material	70.6	53
To summarize the classwork	35.1	26

TABLE XIV

FOLLOW-UP TECHNIQUES USED IN AUDIO-VISUAL PROCEDURE

Follow-up technique used	Per cent	Times reported
Group discussion to clear up doubtful points	70.6	53
By a quiz	31.1	23
Summarization of the material by the teacher	33.8	25

TABLE XV

EXTENT OF USE OF PROJECTED TEACHING AIDS IN VARIOUS SUBJECT AREAS

Subject	Number of films used	Number of stripfilms used	Number of slides used
Science	157	65	20
Social science	249	78	
Mathematics	20	18	
Languages	63	13	
Commercial	15		
Domestic science	66	15	
Physical education	63	18	
Music	58		
Industrial arts	13	26	

CHAPTER VI

ADMINISTRATION OF THE AUDIO-VISUAL PROGRAM

Intelligent administration of audio-visual materials is basic to their effective use in any educational program. Hoban[1] supported this view in stating that the three problems basic to the extended use of audio-visual teaching aids were administration, finance, and teacher training. In this chapter each of these problems are discussed under the general heading of administration, employing further sub-divisions where necessary, to insure adequate coverage. To this end the following points were covered:

1. The need for, and the effective direction of, audio-visual materials.

2. The financing of the audio-visual program.

3. The administrative personnel needed and their qualifications.

4. The training of teachers in the use of projected teaching aids.

5. Student participation in the audio-visual program.

6. Publicity given the use of audio-visual materials in the school program.

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[1]Charles F. Hoban, Jr., "Obstacles to the Use of Audio-Visual Materials," Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949), p. 64.

I. THE NEED FOR, AND THE EFFECTIVE DIRECTION OF,
AUDIO-VISUAL MATERIALS

Justification for the use of audio-visual materials
was not difficult when the educational system was viewed in
the light of the task it is intended to accomplish, and the
immensity of that task. The educational system was briefly
characterized by Brooker[2] when he stated, "Basically, educa-
tion is a short cut whereby we teach the younger generation
all that the preceding generations have learned and which is
still relevant." When education was so considered, and the
tremendous increase in knowledge along with the extended
political and geographic conern was taken into account, a
better way of imparting this knowledge was evidently needed.
The experience of the Armed Forces during World War II in
abbreviated training courses has emphasized the use of audio-
visual materials, and so, many educators have come to accept
the need for audio-visual teaching aids, at least as a par-
tial solution to this problem.

The need for effective direction was also readily
evident. A county superintendent reported that he had wit-
nessed the showing of the Louis-Walcott fight pictures in

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[2]Floyde E. Brooker, "Communication in the Modern World,"
Forty-Eighth Yearbook of the National Society for the Study
of Education, Part I (Chicago: The University of Chicago
Press, 1949), p. 21.

one of his schools with all pupils in grades seven through

twelve in attendance. This picture, he concluded, had little

educational value and was not appropriate in the regular

school program. Other ineffectual practices, which were

directly traceable to lack of good direction are:

1. Films shown to all grade levels at one time when that film was appropriate for only a particular group.

2. Too much time consumed in setting up equipment.

3. No spare parts kept on hand thus causing complete breakdown of the audio-visual program.

4. Available audio-visual materials not being used because no teacher knew about them.

5. Projection equipment rendered unuseable due to lack of maintenance.

6. Teachers completely untrained in the use of audio-visual teaching aids.

7. No evaluation of audio-visual materials or the audio-visual program attempted.

Such abuses in the use of audio-visual aids can be

held to a minimum by an alert coordinator, and it was only

when these abuses were at a minimum that the audio-visual

program began to function adequately. McKown and Roberts[3]

cited the basic factors involved in building an effective

audio-visual program as follows:

1. Develop the idea gradually among the teachers.

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[3]Harry C. McKown and Alvin B. Roberts, _Audio-Visual Aids to Instruction_ (New York: McGraw-Hill Company, 1940), p. 359.

2. Provide for extensive groundwork in the use
   of audio-visual teaching aids.

3. Stress intelligent use of audio-visual materials.

II. FINANCING THE AUDIO-VISUAL PROGRAM

Adequate financing was a second requisite to a sound
audio-visual program. However, with rising costs, the need
for more teachers, and new buildings, it was evident that
those interested in holding down taxes would inspect school
budgets more critically in the years to come. With this
critical inspection of school expenditures it was increasing-
ly necessary that the part of the budget alloting money for
audio-visual instruction should be thoroughly justified and
vigorously defended. Weathers[4] noted a tendency among many
school administrators to adopt an apologetic approach towards
the use of public funds for audio-visual materials. "That
. . . represents the kind of apologetic approach to the use
of audio-visual materials that provides excellent material
for budget opposition!" concluded Weathers. Teachers can aid
materially in overcoming this attitude by their enthusiastic
and intelligent use of audio-visual materials, proving to
administrators and the public alike that money so spent is
wisely spent.

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[4]Garret R. Weathers," A Fourfold Program for Audio-
Visual Progress," Education Screen, XXIX (September, 1950),
   284.

No standard has been established showing exactly what part of a budget should be set aside for audio-visual purposes. Research showed that the trend has been definitely upward in the last ten years, with per pupil costs ranging from fifty-two cents to four dollars in selected city schools in 1947.[5] From an analysis of schools which had well established audio-visual programs, Hosler and Seidel[6] recommended a two dollar per pupil cost as an adequate outlay. However, a variety of factors entered into the decision, including size of the school, type of curriculum and the need for these types of materials; so no precise statement seemed justifiable. It was, however, an inescapable fact that some budget provision should be made for audio-visual teaching materials, and that this need should be given careful consideration when money was allocated.

III. ADMINISTRATIVE PERSONNEL NEEDED AND THEIR DUTIES AND QUALIFICATIONS

The administrative personnel of a small school was found to be effective when limited to one interested person, with perhaps two or three student assistants. This person

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[5]James W. Brown and A. W. VanderMeer, "School Use of Audio-Visual Instructional Materials," Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949), p. 49.

[6]Fred W. Hosler and Charles F. Seidel, "How Much Should a Good Audio-Visual Aids Program Cost?" School Executive, LXI (September, 1947), 71.

was designated the coordinator and given the full responsibility for carrying out the school's audio-visual program. When one person was so designated for this responsibility, it was considered equitable to compensate for the added responsibility and work by either granting a reduction in teaching load or increasing the teaching salary.

A list of qualifications appropriate for an audio-visual coordinator were set down by McKown and Roberts[7] and are here presented in summary form.

1. The possession of administrative ability.

2. Acquaintance with audio-visual methods in classroom use.

3. Acquaintance with subject matter in all grades.

4. The understanding of educational objectives and the ability to correlate the audio-visual program with them.

5. Familiarity with all problems in an audio-visual program.

6. Disposition towards mechanical mindedness, especially in smaller schools.

7. The possession of an agreeable personality.

These qualifications were obviously more exacting than most small schools could hope to obtain in a coordinator, but as a standard they will serve admirably in selecting the person most nearly qualified for the school's audio-visual

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[7]McKown and Roberts, op. cit., pp. 326-27.

coordinator.

The duties prescribed for a coordinator were found to be as varied as the qualifications. Here it was noted that the size of the school system and the emphasis placed upon audio-visual instruction were prime factors in determining the extent of service required of the coordinator. A typical list of duties of a coordinator was given by DeBernardis[8] in grouping eight areas of responsibility usually associated with the position of coordinator. These groupings are:

1. Keep teachers informed of new materials and equipment.

2. Assist teachers in the selection and use of audio-visual materials.

3. Supervise the training and work of student and teacher operators.

4. Coordinate the ordering, delivering, use, and return of audio-visual materials.

5. Promote effective utilization of audio-visual materials.

6. Coordinate the use of audio-visual facilities, equipment, and materials.

7. Provide a clearinghouse for handbooks, bulletins, and other resource materials.

8. Supervise the care and storage of audio-visual equipment and materials.

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[8]Amo DeBernardis, "In-service Teacher Education for Use of Audio-Visual Instructional Materials," Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949), p. 118.

Any coordinator who consistently attempted to serve in each of these areas was felt to closely approach the goal of competency.

Other duties were suggested that could well come within the scope of the coordinator's responsibility. These were to buy audio-visual equipment, to prepare the audio-visual budget, and to educate the community to the use of audio-visual teaching aids in the school.

IV. TRAINING OF TEACHERS IN THE USE OF PROJECTED TEACHING AIDS

Continuous professional advancement has long been considered a prerequisite to continued teaching efficiency. This idea is nowhere more applicable than in the field of audio-visual teaching methods; for as Brooker[9] stated:

> The doctor who knows nothing of sulfa drugs or of penicillin is hardly likely to be the kind of individual to whom we would entrust the medical care of our children. The fact that these drugs did not exist when he went to school, or that their use was not taught in the medical schools he attended, would not serve as an excuse nor would it justify his continuing in practice.
>
> Should we expect any less of the teacher? Do not the members of the teaching profession have the same responsibility for keeping up to date in that knowledge and those developments which relate to their own profession? Do we have the right to continue to use the methods employed ten, twenty, thirty years ago, to continue teaching with a training that, in many instances, is out of date?

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[9]Brooker, op. cit., p. 19.

Therefore, it can be expected that non-using teachers should investigate the possibilities of audio-visual type instruction either through in-service training or through summer courses at teacher training institutions.

However, it was noted that non-using teachers were one of the major deterrents to the extended use of audio-visual aids.[10] When the distinct advantages claimed for audio-visual materials were considered the reason for this apathy on the part of many teachers was difficult to determine. Some reasons advanced by the teachers themselves were that they did not have the technical skill necessary to operate the equipment, that movies were for amusement purposes, or that they were unable to obtain the material they desired. Each of these supposed drawbacks was found to carry little weight when investigated more closely. First, concerning the lack of time, it was stated that while courses of study must often be covered and scholastic standards maintained in established subjects, audio-visual aids were valuable in putting meaning into the curriculum that otherwise was covered but not understood.[11] In connection with the skill required to operate the necessary equipment, the experience of most of the schools contacted in this survey showed that students were highly

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[10]Weathers, loc. cit.

[11]Hoban, op. cit., p. 67.

effective as projectionists when properly trained. There-fore, in cases where teachers felt incapable of doing the projecting, students could be used to perform this duty. The statement branding educational films as amusement devices indicated, as Reed[12] suggested, that the teachers did not understand the relationship between audio-visual aids and what they were trying to teach. The excuse concerning the lack of suitable material, while partially valid, was not con-sidered justifiable as all teachers when aided by a coordina-tor could find some material that would be of value in their classwork. In the final analysis it was Dale[13] who hit upon the two basic reasons for many teachers' apathetic attitude towards audio-visual instructional materials. First, "Hard-ening of the Categories," a condition caused by the inertia of habit; and second, "insecurity," stemming from the teach-er's belief that if he should fail, he will lose status. It was the correction of these two difficulties upon which the core of any recommended in-service training program was based.

Certain fundamental principles were important to the success of an in-service training program. Hare[14] concluded

[12]Paul C. Reed, "Not Sufficient Time," Educational Screen, XXIX (May, 1950), 193.

[13]Edgar Dale, "The Forces Working For and Against Audio-Visual Education," Montana Education, XXVI (January, 1950), 6.

[14]Donald E. Hare, "Teacher Growth and Teamwork," Edu-cational Screen, XXIX (February, 1950), 57.

that four such principles should be:

1. Careful planning of the entire program.

2. Continuous operation of the program.

3. Frequent revisions of the program to keep abreast of changing ideas.

4. Allowance for self-expression and teacher participation in program planning.

In addition to these principles, several specific techniques that should be considered in an in-service training program have been advocated. Six such techniques that were listed by Gnaedinger[15] are:

1. Fit the program to the individual needs of the teachers.

2. Proceed slowly, as new skills need time to develop.

3. Get the teacher's interest by developing an appreciation of the role of audio-visual materials.

4. Keep the groups of trainees small.

5. Provide adequate time, other than after school hours, for meeting and discussions.

6. Provide adequate facilities, materials, and equipment for instruction.

With these guiding principles and techniques in mind, an outline for an in-service training program in audio-visual teaching methods was developed. The outline for this training

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[15]William G. Gnaedinger, "Preservice Teacher Education For the Use of Audio-Visual Instructional Materials," _Forty-Eighth Yearbook of the National Society for the Study of Education_, Part I (Chicago: The University of Chicago Press, 1949), p. 99.

program was based on Hare's[16] five approaches to in-service
training, namely, orientation, group meetings, group partici-
pation in solving problems, demonstrations, and day-to-day
in-service training.

The orientation of the teachers, especially the new-
comers, in the matters of the existing audio-visual program
and materials available was considered a necessary first step
at the beginning of each school year. This orientation was
done to acquaint each teacher with the status of audio-visual
education in the school and to familiarize them with all ma-
terials that were available for their use in classroom work.
It also served to improve cooperation and to stimulate mutual
interest in the audio-visual program by making each teacher
a part of a common undertaking designed to improve instruc-
tion in the school.

Group meetings were best carried on in small grade
level or subject area groups. In this manner problems of the
individual staff members were more nearly met and solved,
with a minimum of time wasted on considerations not vital to
a particular teacher. For example, a meeting devoted entire-
ly to the study of the particular techniques of presentation
needed to obtain the best results from a film or stripfilm
on speech gestures would be of less interest and value to a

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[16]Hare, op. cit., p. 58.

mathematics teacher than to an English teacher. Further, when individual problems of the teachers are left unsolved and a great amount of the information imparted is general or inconclusive, teachers tend to lose enthusiasm for the training program. However, some large staff meetings were deemed necessary where general methods of presentation were considered. Also, such meetings served to enlarge the staff member's horizon in the overall picture of audio-visual instruction in education. Finally, the seminar-type group meeting was advised, in which original material was presented and evaluated by the teachers in the light of their local school needs.

The solving of audio-visual problems through group participation presented another means of instructing teachers. Where a specific problem arising out of practical classroom experience in the local school was presented for solution to the group, interest was high and often, as the result of careful study, new or modified techniques were derived. In such group participation lay one of the most potent forces working for better trained staff members.

Demonstrations were considered valuable as another means of teacher training. The preparation and presentation of this training technique became the responsibility of the audio-visual coordinator. The operation of the school's projection equipment, student preparation for viewing, follow-

up activities, and technical excellence in projection were each easily presented, showing both good practice and common faults to avoid.

In-service training through day-to-day teaching experience produced many desirable results. The coordinator, when allowed sufficient time, visited teachers in their classrooms, noted both strong and weak points, and advised them of their progress and made suggestions for improvement. Further, the self-learned lessons, and suggestions and hints from fellow teachers constituted an important source of in-service training material.

In conjunction with a well balanced in-service training program other avenues of learning were advocated for teachers who could avail themselves of them. College summer courses, correspondence courses, extension courses, and independent reading and study each presented ample opportunity for the willing teacher to improve his techniques in audio-visual instruction.

V. STUDENT PARTICIPATION IN THE AUDIO-VISUAL PROGRAM

Efficiency and excellence in projection of audio-visual aids were often achieved through the use of student projectionists. When student projectionists were required, as part of their duties, to read captions, explain difficult words or interpret the material, inhibitions and shyness

could be overcome and in addition scholastic advancement was achieved.[17]

Four general requirements became evident in studying the establishment of a student projectionist group. These are:

1. The students should be organized into a club.

2. Students from several grades in the school should be included.

3. Student projectionists should operate on a schedule.

4. Student projectionists should be carefully trained in their duties.

The first point was considered necessary in order to produce a smoothly functioning system and to engender a spirit of pride and responsibility in the work. The second point insured a continuous supply of well trained operators from year to year. The third point provided for a dependable service that took the responsibility of the mechanics of projection from the teacher's shoulders. The last point insured good projection and proper care for the audio-visual materials and equipment while in use, and in transit to and from the place of showing.

The duties of the student projectionists, while depending on the qualifications of the students available for

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[17]Rita Hockheimer, "Training Pupils for Participation," The Nations Schools, XXXXII (October, 1948), 54-55.

the work, could include several of the following tasks:

1. Operate all projection equipment in the school.

2. Clean and oil all projection equipment in the school.

3. Keep records of service given the projection equipment.

4. Replace spare parts that were kept on hand.

5. Distribute and return all projection materials received by the school.

6. Aid the teachers with seating arrangements, darkening of the room and other details of good viewing conditions.

VI. PUBLICITY OF THE AUDIO-VISUAL PROGRAM

Brown and Hainfeld[18] found that the publicity given to school activities did not present a full picture of school life. Their statistics revealed, in part, that about eighty-seven per cent of local newspaper publicity was devoted to athletics, about seven per cent to special events, and about three per cent to student activities. These figures showed that little, if any, news of the school's audio-visual program reached the public at a time when desirable publicity was necessary to gain backing for increased financial support. At least four avenues were open to the audio-

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[18]Charles E. Brown and Harold Hainfeld, "Telling the School's Story with 2 x 2's and Tape," *Educational Screen*, XXIX (March, 1950), 112.

visual coordinator through which effective publicity could
be obtained. First, a greater utilization of school and
local newspapers by inserting short notices of the school's
activities in the audio-visual field. Second, through pre-
senting audio-visual demonstrations to parent groups that
visit the school. Third, by lending the school's audio-
visual equipment to local organizations. Fourth, through
the students themselves, who will always advertise to their
parents features of the school's program that they consider
especially good.

VII. SUMMARY

Able administration of the audio-visual program is
essential if the program is to be a success. The first re-
quirement of good administration was selecting a coordinator
whose qualifications were acceptable. This coordinator was
then made responsible for the problems of finance, sources
of materials, teacher training in audio-visual techniques,
and direction of the student group which aided in the pro-
gram. Publicity of the audio-visual program has been greatly
neglected in the past and steps should be taken to insure
that in the future more adequate coverage is given.

CHAPTER VII

EQUIPMENT AND FACILITIES

To determine how much projection equipment was required and what types appeared best suited are outstanding problems in developing the audio-visual program in any school. Research revealed that the solution to the first problem was primarily one of availability of funds. A United States Office of Education survey[1] reported that seventy-seven per cent of schools not owning movie projectors indicated that the paramount reason was lack of funds. The same survey also noted that only one respondent gave as a reason that owning a movie projector was contrary to school policy. The matter of what type of projection equipment to buy was a more complex consideration requiring a more thorough treatment.

I. AMOUNT AND TYPE OF EQUIPMENT NEEDED

In determining the amount of projection equipment necessary for a school, Schropp[2] used three criteria: (1) was the program just being initiated, (2) to what extent were teachers using audio-visual materials, and (3) how accessible

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[1]Movie Projectors in Public High Schools (Washington, D.C.: United States Government Printing Office, 1950), p. 13.

[2]Clifton F. Schropp, "What About Equipment?" School Executive, LXVII (September, 1947), 68.

were films, stripfilms, slides, and other projection materials. When the school system was studied in the light of these criteria a reasonably sound judgment concerning needed equipment seemed possible. Additional notice was necessary in the matter of which pieces of projection equipment should be purchased first, especially where the budget was limited. The practical approach indicated that the types easiest to operate should be acquired first; for by so doing it was felt that the teacher's confidence in projected teaching aids was enhanced. On this basis the following order of acquisition seemed justifiable:[3]

1. opaque projector

2. screen

3. standard slide projector using 3 1/4 x 4 inch slides

4. stripfilm projector

5. sound motion picture projector, 16-mm

II. ADVANTAGES AND LIMITATIONS OF PROJECTION EQUIPMENT

Each piece of projection equipment had certain advantages and certain limitations. To be aware of these characteristics helped to guide the user in effective utilization and also avoided unwarranted expenditures for audio-visual equipment that could not be effectively used in the instruc-

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[3]Schropp, loc. cit.

tional program.

Motion picture projector, 16-mm. The suggested advantages of this machine are:

1. Distant or inaccessible places can be brought to the classroom through the medium of the film.

2. The material is to a greater degree non-verbal than usual classroom work and, therefore, aids the slow learner who lacks adequate background for purely verbal instruction.

3. The information gained is retained for a greater length of time than that gained from verbal instruction.

4. More information can be presented in a shorter period of time.

5. Learning that required the understanding of the relationship of things in motion is more easily mastered.

6. Motion that occurs too slowly to be seen under ordinary circumstances can be illustrated by time-lapse photography. Also, motion occurring too rapidly can be shown in slow motion.

7. Difficult percepts can be animated for easier understanding.

8. Objects that are either too large or too small for convenient study can be shown in any desired proportion of their true size.

The limitations set forth are:

1. Films are often difficult to obtain.

2. The operation of the machine is complicated and the equipment is usually difficult to transport.

3. The equipment is relatively costly.

4. Movies sometimes tend to be mainly for entertainment.

5. Films tend to encourage a spirit of passive reception on the part of the learner, due to ease of interpretation.

6. Learning crutches are provided by movies that may prove to be a handicap in later learning.

7. Imagination is stifled.

8. When used as introductory material, the scope of inquiry into the topic may be seriously limited.

9. Movies are non-verbal in greater or less measure, and do not facilitate generalizations which are usually expressed verbally.

Stripfilm projector. The advantages claimed for the stripfilm projector are:

1. Verbal comment and class discussion are possible during presentation.

2. Each frame can be held on the screen and studied in detail, or re-shown when necessary.

3. There is a greater variety of subject matter for screening.

4. The machine is easy to operate and very portable.

5. The initial outlay for the projector is small compared to the movie projector, and stripfilms are inexpensive.

The limitations are:

1. The pictures are in a fixed series.

2. Stripfilms lack the dramatic impact of the motion picture.

3. Reading ability is required in interpreting the titles.

Standard slide projector. The advantages of the

standard slide projector are:

1. Extremely simple to set up and operate.

2. Each slide can be studied in detail.

3. Slides can be made by students at a reasonable cost.[4]

The limitations are:

1. The slides are breakable.

2. Slides require a large storage space.

3. Slides are costly to purchase and are expensive to ship.

Opaque projector. The advantages of this projector are:

1. There is a great variety of material available for projection.

2. Material can be left in a book or magazine when it is being screened.

3. The machine is easy to operate.

The limitations are:

1. The machine has a large light loss which requires a very dark room for good projection.

2. The projector is large and cumbersome.

3. The heat generated by the light source causes a hazard of possible burns to the operator.

Screens. Any white surface that will not distort the image makes a satisfactory screen. However, when complete

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[4]D. F. Schutte, "Frosted Glass for Slides," Education-al Screen, XXX (February, 1951), 69.

darkening is impossible the beaded screen provides brighter images. For wide angle viewing the flat white screen is recommended, as less distortion occurs than in the case of the beaded screen. Also, portability is important when the screen must be used in several classrooms.

II. OPERATION OF EQUIPMENT

Efficiency and inconspicuousness characterize good procedure in the operation of projection equipment. Many factors enter into this characterization, each contribution significantly to the attainment of the desired procedure. Several such factors are:

1. Promptness of the operator in getting ready for the showing.

2. The quietness with which the operator carries out his duties.

3. The rapidity with which the operator performs his duties.

4. The operator's ability to focus the picture properly, to frame the picture properly, to adjust the sound properly, and to keep the picture steady.

To summarize at great length the details of operation of various projectors was deemed unnecessary. For this specific information the reader is referred to the manuals of instruction published by the manufacturers of projection equipment, or to various projectionist's manuals such as

A B C's of Visual Aids[5] and Training Films and Film Strip
Projection (TM 11-401).[6] By studying and digesting the in-
structions contained in these manuals it was felt that any
person could become a reasonably adept projectionist.

III. MAINTENANCE OF EQUIPMENT

With projection equipment expensive, and often irre-
placeable, it was evident that proper maintenance was funda-
mental to a successful audio-visual program. To establish
some general principles, lists of recommended practices to be
avoided are here presented.

DO:

1. Have well trained persons operate projectors.

2. Clean and oil the projectors regularly.

3. Keep records of cleaning, oiling, hours of ser-
   vice, and repairs made.

4. Keep spare parts on hand which are easily replaced
   by the operator.

DON'T:

1. Allow untrained persons to operate the projectors.

2. Don't permit untrained persons to attempt repairs
   on the machines that require the services of a

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[5]Philip Mannino, A B C's of Visual Instruction
(Ypsilanti, Michigan: University Lithoprinters, 1948).

[6]Training Films and Film Strip Projection, TM 11-401
(Washington, D.C.: United States Government Printing Office,
1942).

trained radio repair man.

3. Don't leave projection equipment in places where unauthorized persons can tamper with it.

Again, no detailed statement appeared necessary, as reference to the manuals previously cited will provide all the information necessary for a maintenance program that can properly be carried on in the school.

IV. SUMMARY

In meeting the problems involved in audio-visual equipment and facilities each school should study its own situation carefully. This study is necessary to avoid the error of buying equipment merely because it gives the impression of progressive education and not because there is a real need for such equipment. The advantages and limitations of the various pieces of projection equipment require careful study for it is upon knowledge of these qualities that intelligent selections can be made. The operation and maintenance of the equipment is also important in the audio-visual program. The essence of efficient operation and maintenance is wise planning, careful training of personnel, and continuous vigilance in administering and improving the service.

CHAPTER VIII

AUDIO-VISUAL TEACHING TECHNIQUES

The introduction of audio-visual teaching aids has been vigorously advocated by some, while others have exercised marked restraint in bringing them into their school or classroom. It seemed, therefore, that there existed among school people a considerable divergence of opinion as to the effectiveness of audio-visual teaching aids, and hence, the need for bringing them into the school as a part of the regular instructional procedure. Here a basic misunderstanding concerning the philosophy of audio-visual materials in education appeared evident. On this point a statement by Gates[1] was enlightening. This author observed:

> One of the most promising ways to supplement the pupil's experience and the resources of the immediate environment is to utilize the great variety of visual aids which are available. The phrase "to supplement" in the previous sentence was used advisedly, for these media of instruction are not substitutes for verbal materials, but means of making them more effective. In fact, these devices are likely not to be productive when they stand alone, but only as they are closely integrated with other media and with other learning activities. The use of motion pictures is increasing rapidly in the schools, but they are too often treated as "shows" and not as efficient means to well-defined learning outcomes.

With these objectives in mind, it was the purpose of

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[1]Arthur I. Gates, and others, Educational Psychology (New York: The Macmillan Company, 1948), p. 429.

this chapter to present such audio-visual philosophy and procedure as would be useful to teachers in realizing the particular learning outcomes which are possible when audio-visual teaching aids are used judiciously.

I.   AUDIO-VISUAL PHILOSOPHY

Before taking up the precise techniques of audio-visual presentation, it was necessary to establish the fundamental philosophy of effective audio-visual teaching methods. On this problem Brooker[2] stated:

> The problem that faces the teacher is the realization that verbal language is no longer enough; he must master the other languages and media of communication and learn to apply them to the problems of the classroom. Thus, he will need to re-think the whole problem of communication and to examine learning situations to determine whether words or pictures will be more effective.

Clearly, the problem posed was what constitutes effective methods in audio-visual instruction. To this end two lists of criteria were selected, one giving the characteristics of good audio-visual materials. The characteristics of a well balanced audio-visual program are:

1.   The teachers should be acquainted with a wide variety of audio-visual materials.

2.   Teachers should understand the purpose of audio-visual materials to be supplementary rather than

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[2]Floyde E. Brooker, "Communication in the Modern World," Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949), p. 23.

substitute.

3. Audio-visual materials should be made available to the best ability of the school.

4. Proper emphasis should be placed on the correct role of audio-visual aids.

5. The audio-visual program should contain a variety of materials.

6. The audio-visual materials should be integrated into the curriculum.

7. The program should have a purpose or goal.

The characteristics of good audio-visual materials are:

1. They should develop new interests.

2. They should stimulate further activity.

3. They should provide the student with desirable information.

4. They should be usable as introductory or review material.

5. Appreciations and understandings should be developed through their use.

6. All sides of an issue should be presented, whenever possible.

7. They should clarify, establish, and correlate accurate concepts.

8. Trivial or irrelevant details should be absent, which would tend to distract from the real purpose of the aid.

The foregoing criteria served as a basis upon which to proceed. However, before continuing, two controversial points required attention. These were, first, do students

retain information gained from audio-visual materials to a greater degree than information gained from other sources; and second, does the bright or dull student profit most from audio-visual materials? The first question was answered in the affirmative in research reported by Miles and Spain[3] which showed that of three equated groups, the movie trained group did significantly better on tests for immediate learning and for learning retained after two months than the two competing groups which did not have the advantage of audio-visual aids in covering the subject matter presented.

The second question found the authorities in apparent disagreement. Hoban[4] stated, "It has been assumed that audio-visual materials were best for the dullards, but research has shown that the brighter and better-educated person gets more out of films." On the other hand, Miles and Spain[5] reported that visual methods were particularly appropriate for the average and below average person. However, the implied differences were resolved when the statement of Dale and Hoban[6]

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[3]John R. Miles and Charles R. Spain, Audio-Visual Aids in the Armed Services (Washington, D.C.: American Council on Education, 1947), pp. 64-65.

[4]Charles F. Hoban, Jr., "Obstacles To The Use of Audio-Visual Materials," Forty-Eighth Yearbook of the National Society for the Study of Education, Part I (Chicago: The University of Chicago Press, 1949), p. 66.

[5]Miles and Spain, op. cit., p. 87.

[6]Edgar Dale and Charles F. Hoban, Jr., "Visual Education," Encyclopedia of Educational Research, 1941, p. 1328.

was considered:

> The effectiveness of films with children of a given
> level of "intelligence" must be expected to vary with
> the subject taught and with the learning outcomes
> measured. Where effectiveness is considered in terms
> of verbal responses to information tests, films seem
> to be relatively more effective for "dull" than for
> "bright" children, depending on the subject of instruc-
> tion and the method of presentation. Where effective-
> ness is considered in terms of ability to make verbal
> generalizations, films do not seem to be more effect-
> ive for "dull" than for "bright" pupils. This result
> is to be expected because "bright" pupils tend to
> make more discriminations than do "dull" pupils.

Finally, two other considerations were deemed pertin-

ent to good audio-visual philosophy. The first was to point

out an inherent weakness in audio-visual teaching methods

in the relatively impersonal nature of such methods. Here,

the absence of an opportunity for questioning and explana-

tions during viewing, often materially limited the value of

these devices. This shortcoming was overcome to a great ex-

tent by proper preparation and utilization. The second con-

sideration was a caution regarding the use of audio-visual

materials in the areas of human relations. Experience has

shown that audio-visual materials elicit specific attitudes

and care must be taken to see that these attitudes are ac-

ceptable.[7]

II. SELECTION OF AUDIO-VISUAL MATERIALS

The selection of audio-visual materials was a vital

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[7]Miles and Spain, op. cit., p. 84.

step in initiating effective classroom procedure. Larson[8]

presented a concise statement relating to selection of mater-

ials in saying:

> The teacher, after determining the type of audio-
> visual material to be used, needs to select the pre-
> cise unit of material. Selection, here, becomes a
> process of considering the relation of the content of
> the material to other instructional materials to be
> used in the unit, the treatment of content, the ac-
> curacy of the material, and how it is to be used within
> the unit. If it is to initiate a unit, the material
> should give a broad general treatment of the topic.
> If it is to extend the unit, it should suggest related
> interest areas. If it is to present specific facts or
> skills, it should be lucid, concentrated, and closely
> organized presentation of the material useful for in-
> troduction may serve the purpose.

More precisely, certain characteristics were assigned

that defined goals in good selection of audio-visual mater-

ials. These goals were divided into two groups, namely,

technical standards and standards for educational values.

The technical standards are:

1. Sharp and distinct pictures and clear sound where
   applicable.

2. Attractive composition to stimulate interest.

3. Good production standards, including theme,
   emphasis, acting, etc.

4. Suitable length based on the grade level that
   is viewing.

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[8]L. C. Larson, "Suggested Answers to Some Pertinent
Questions in the Audio-Visual Field," Forty-Eighth Yearbook
of the National Society for the Study of Education, Part I
(Chicago: The University of Chicago Press, 1949), p. 219.

Standards to be considered critical in assessing educational values are:

1. Ready correlation and integration of the material with the lesson.

2. Accuracy of the facts being presented.

3. Pertinence of the facts to the lesson being studied.

4. Absence of distracting or irrelevant material.

5. Degree to which the material is adjusted to the educational level of the learner.

6. Capacity to motivate the learner to further research.

7. Presence of a definite purpose in relation to the lesson.

8. Ability of the material to arouse curiosity and create constructive desires.

In addition, motion pictures have proven valuable where knowledge of movement is essential. Further, the understanding of inter-relationships in historical sequences was promoted by motion pictures, as was shown in a series of experiments in which a thirty-five per cent increase in pupil achievement was recorded for the movie trained group over the verbal instructed group.[9] In a similar connection, strip-films were found to be especially valuable in making comparisons.

In the task of selection of audio-visual materials

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[9]Gates, op. cit., p. 430.

teachers needed help, and three sources of such help were evident; the in-service training program, individual assistance from the coordinator, and the accessibility of files, catalogues, and bulletins describing available audio-visual materials.

III. PREPARATION

After the projected teaching aid had been selected, the next step was to make careful preparation for its use. Here, previewing, or when available, studying the teacher's guide was the initial step to be taken. This was essential for upon it depended what further preparations were made by the teacher and by the pupils. The teacher's next problem was to integrate the teaching aid with all other teaching devices being used in the lesson. To aid in accomplishing this end, books and magazines that contained related subject matter were required and the bulletin board needed appropriate preparation. Good results were also obtained where a library shelf was set aside for this supplementary material, according to McMasters.[10] In conjunction with other preparation it was necessary to unfold a precise goal to be achieved through the use of the teaching aid. Devices suggested as

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[10]Thomas W. McMasters, "The Classroom Got Into the Movies," Educational Screen, XXIX (September, 1950), 286-7.

being particularly effective in obtaining this objective included providing the student with a list of things to look for, administering a pre quiz covering the important points, or conducting a well planned group discussion. The pre quiz was particularly valuable in final evaluation of the success of the lesson. Finally, immediately prior to the showing, a brief introductory explanation was found to be highly effective.[11] However, on this point, Dresden[12] cautioned against any prolonged discourse that might depress the level of curiosity or cause restlessness among the students.

In addition, several technical matters required attention before preparations were considered complete. Conditions for viewing, comprising in part, proper seating, good ventilation, adequate darkening of the room, and provisions for efficient operation of the projection equipment, demanded notice.

The preparation of the students, while closely interwoven with the preparations made by the teacher, nonetheless deserved special attention. Gates[13] said, "Furthermore, one's ability to profit from visual aids, as from verbal

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[11]Miles and Spain, op. cit., p. 66.

[12]Katharine Dresden, "A Demonstration Lesson," Audio-Visual Guide, XV (February, 1949), 8.

[13]Gates, op. cit., p. 429.

stimuli, . . . depends on a relevant background of exper-
ience." Many of the preparatory activities of the teacher
were aimed at providing this relevant background, but the
student must be encouraged to gain this basic information
through reading and a re-inspection of his personal exper-
iences.

IV. USE OF AUDIO-VISUAL AIDS

Coincidental with the mechanical problems involved
in the actual presentation of projected teaching aids, there
were several theoretical considerations. Chief among these
were: (1) when to use projected teaching aids, (2) was the
classroom the best place for projection, (3) what was the
best method of grouping students for viewing, (4) what was
the best method to avoid passive reception of the teaching
aid by the students, and (5) how to teach with projected
teaching aids as opposed to merely displaying them. On the
question of when to use audio-visual teaching aids Aughin-
baugh[14] stated that while it was best to fit a film into your
class work precisely when you are studying the topic to which
the film applied, if circumstances prevented this, use it
whenever it became available. This concept was based on the

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[14]B. A. Aughinbaugh, "When is the Best Time to Use a
Film," Montana Education, XXVI (January, 1950), 11.

fact that few schools enjoyed sufficiently affluent circumstances to be able to provide just the right teaching aid at just the right moment. Therefore, it was deemed advisable to present a teaching aid at a somewhat inopportune time rather than deprive the student of the sensory experience entirely.

Authorities generally agreed that the classroom was the best place to show projected teaching aids. The advantages claimed for this procedure were minimum loss of time and the psychological advantage of keeping the learner in his regular learning situation. It was found that students removed from their regular classroom for viewing purposes tended to treat films and stripfilms more as amusement than as part of the lesson.[15] As a corollary to the above proposition, grouping by classroom units was considered to be most satisfactory.[16] While no classroom unit was entirely homogenous in intelligence or experience, smaller groups were impractical and larger groups impaired the educational value considerably.

The problems of passive reception by the students and how to teach with projected aids were closely allied. Car-

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[15]Larson, op. cit., p. 220.

[16]Charles L. Frank, "A Survey of the Use of Projected Visual Aids in the Public Schools of Montana," (unpublished Master's thesis, Montana State University, Missoula, 1947), p. 20.

penter and Greenhill[17] stressed the fact that learning from films required close and sustained concentration, and further, that students found it necessary to readjust their viewing habits acquired by long practice of seeing entertainment films. To attain sustained concentration and to correct poor viewing habits five techniques appeared valuable. These are:

1. Establish definite objectives through previous discussion.

2. Provide a list of facts or concepts to be found in the teaching aid.

3. Re-show the teaching aid following a second period of discussion.

4. Require notes to be taken, and turned in, on the high points of the material presented. (The limitations of this technique are discussed later.)

5. Give a quiz over the discussion and subject matter of the teaching aid.

The problem of how to teach effectively with projected aids was primarily one of how to integrate and correlate the audio-visual material with other materials used in the lesson. The preparation, already noted, was one vital step; while discriminating use and follow-up activities added to effective utilization. Lastly, careful evaluation of the

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[17]C. R. Carpenter and L. P. Greenhill, "Using Instructional Films Effectively," Educational Screen, XXIX (October, 1950), 331-33.

educational values of the material completed the process. Dresden[18] reviewed an audio-visual demonstration lesson that pointed out several techniques necessary to discriminating use. In one instance only half of the film was shown, followed by a discussion of what topics or ideas were important in the film that far. The film was then shown again, from the beginning, and as each topic or idea was completed the film was stopped again while the class decided what notes should be taken for their permanent record. The remainder of the film was shown in this manner and the exercise repeated. Another device used during the time between viewing parts of the film was for the teacher to write difficult words on the blackboard to stress meaning and spelling. A third advantage inherent in this method was that the brief pause allowed periods of released attention, making it possible for the students to achieve close concentration on all parts of the film.

In reference to note taking as a technique in audio-visual presentation, research by Ford[19] indicated that this technique tended to distract students from key ideas and hindered generalizations. Based on this research, and re-

[18]Dresden, op. cit., pp. 7-8.

[19]W. E. Ford, "Is Note Taking When Viewing Motion Pictures Effective in High School Science?" Education, LXVIII (October, 1947), 125-27.

search previously cited, it was concluded that note taking

should not be made a dominant part of audio-visual instruc-

tion, but that brief notes were advantageous in pointing out

the main idea to be gained from the audio-visual material.

V. FOLLOW-UP AND EVALUATION

The concluding activities used in audio-visual pre-

sentation were as vital to success as any other phase.

Kingsley[20] reported that requiring a report or quiz on the

material presented will make children more attentive and

stimulate more careful observation. Also, in addition to

the introductory discussion, a second discussion session

should follow the viewing in order to correct any false or

hazy impressions that had been gained. The following follow-

up activities have been suggested as possible ways to increase

the effectiveness of audio-visual materials:

1. Conducting a group discussion.

2. Giving a quiz over the subject matter covered.

3. Having students assemble notes in a permanent notebook.

4. By the teacher presenting a brief summarizing statement.

5. By suggesting further research in books, magazines, newspapers, etc.

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[20]Howard L. Kingsley, The Nature and Conditions of Learning (New York: Prentice-Hall, Inc., 1946), p. 282.

6. By initiating classroom projects on related sub-
   jects.

In each of these devices student initiative and ori-

ginality needed to be encouraged, while care was taken that

each student embarked upon some activity within his capabil-

ities.

It was here judged expedient to stress again the

necessity for treating audio-visual materials as auxiliary

materials, and not as substitute materials. From this fact

stemmed the proposition that students must be held equally

responsible for learning derived both from audio-visual mater-

ials and from regular learning devices.

Lastly, the need for evaluation exacted attention from

the authorities. In this area of audio-visual activities

McKown and Roberts[21] listed seven points to be considered in

evaluating audio-visual materials, and their outcomes. These

are:

1. Adaptability of the teaching aid to'the pupils.

2. Degree of pupil interest.

3. Degree of pupil participation.

4. Reaction of slower students.

5. Results of formal and informal tests.

6. General class atmosphere.

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[21]Harry C. McKown and Alvin B. Roberts, _Audio-Visual
Aids to Instruction_ (New York: McGraw-Hill Company, 1940),
p. 47.

7. General scholastic record.

In carrying out a program of evaluation, two courses were open to the teacher: to perform this duty herself, or to solicit the aid of her pupils. The latter method was considered the best as it developed in the pupils an ability to analyze and criticize and aided the teacher in clarifying her own thinking on the effectiveness of the audio-visual material being evaluated.

VI. SUMMARY

Audio-visual materials should be used to supplement regular teaching methods, not to substitute for them. In using these materials it is necessary to understand their advantages and limitations and to make provisions to secure the best possible learning outcomes. To achieve this, materials need to be selected that aid significantly in reaching some desired goal. Also, preparation by the teacher and by the pupils is essential if audio-visual teaching aids are to be a worthwhile part of the educational program. Effective procedure during use of projected teaching aids involves attention to mechanical details of operation and consideration for the conditions under which the student is exposed to the learning situation. Finally, follow-up activities and evaluation are needed to ensure the realization of outcomes of the audio-visual program.

CHAPTER IX

CONCLUSIONS AND RECOMMENDATIONS

In drawing conclusions, a careful comparison was made between the material cited as being indicative of a good audio-visual program and the material that was obtained from the interview check-list and questionnaire. This comparison was limited to some degree by the fact that many respondents were unable to answer certain questions, which lessened the validity of the conclusions based on these questions. However, care was taken to avoid unsound assumptions. According to previous practice divisions were made in the presentation of the conclusions including, administration, equipment and facilities, and teaching techniques.

I. CONCLUSIONS

Administration. The following points were noted in connection with the administration of the audio-visual programs in the schools surveyed:

1. Budget provisions for audio-visual programs are made in three fourths of the schools, but the amount is too small.

2. The trend is for one person to coordinate the audio-visual program, as evidenced by the existence of the position of coordinator in three fourths of the schools.

3. Insufficient recognition is being given the position of coordinator, as shown by the lack of

released time from other duties and the absence of any added salary.

4. Coordinators are not performing many duties essential to their position. This is probably due to lack of time.

5. Teacher training in the use of projected teaching aids is not well organized where it is attempted, and is attempted only in fifty per cent of the schools.

6. The number of teachers who had received college training in audio-visual methods is relatively large (twenty-one per cent), and these teachers could serve as a nucleus from which to extend the training of other teachers.

7. Students are being used as projectionists, but little attempt is being made to organize the program.

8. The publicity given the audio-visual program in most schools is inadequate.

Equipment and facilities. The following points were noted in connection with the equipment and facilities of the schools surveyed:

1. Most schools use a central projection room for viewing, although several schools use classrooms also.

2. Storage facilities appear satisfactory in most schools.

3. Major stress in the audio-visual program is placed on the 16-mm sound motion picture projector.

4. There is a trend towards greater use of the strip-film projector.

5. Very little stress is being placed upon the use of the opaque projector.

6. The standard lantern has been abandoned entirely.

7. Satisfactory screens are available in all schools.

8. Projectionists in all schools are being given adequate training.

9. The maintenance of projection equipment is being well done.

10. The most pressing problems in audio-visual programs are proper ventilation during showing, getting the desired material at the right time, and the mobility of the projection equipment.

Teaching techniques. The following points were noted in connection with the teaching techniques of the teachers contacted:

1. A high percentage of the teachers feel that the extended use of audio-visual materials would improve their classwork.

2. Most teachers think that special training is necessary to obtain the best results from the use of audio-visual materials.

3. Most teachers are interested in participating in an in-service training program.

4. Difficulty in getting the desired material at the right time is the main reason given for limiting the use of projected teaching aids.

5. Previewing is done by approximately one half of the teachers.

6. Follow-up activities are stressed to a greater extent than activities for preparation.

7. The tendency is to use projected teaching aids mainly as supplementary material.

8. Projected teaching aids are used most extensively in the fields of science and social science; and least extensively in the fields of mathematics, commercial, and industrial arts.

Summary. The administration of the audio-visual programs is not fully developed, with a particular weakness in the area of budgeting for audio-visual education. Student participation in the program is general, though not well organized, and the training of teachers in audio-visual methods needs attention. The greatest stress is being placed on the use of the 16-mm sound motion picture projector while the opaque projector and the standard are being used very little. Teachers are interested in learning good audio-visual methods. The use of projected teaching aids is concentrated in science and social science.

II. RECOMMENDATIONS

The recommendations that follow are presented with the purpose of extending practical suggestions for the possible improvement of audio-visual programs in the schools surveyed. It is realized that some schools will have already fulfilled certain of the recommendations, however, the use of these recommendations as a basis for evaluation of the existing audio-visual programs would seem to merit consideration.

Administration. The following recommendations are made in connection with audio-visual administrative practices:

1. The position of coordinator should be more clearly defined, with definite duties specified. Also,

the allowance for released time or extra salary would be advantageous.

2. Provisions in the yearly budget should be made for audio-visual expenditures even if the amount allowed is very small. This will necessitate a more thorough justification for audio-visual expenditures.

3. The in-service program for training teachers in audio-visual methods should be better organized. A definite time should be allowed for this function.

4. Student participation in the audio-visual program as projectionists and assistants should be more carefully organized.

5. Teachers should be encouraged to take courses in audio-visual methods during summer school attendance.

6. More publicity should be given the audio-visual program, outside the school newspaper.

Equipment and facilities. The following recommendations are made concerning audio-visual equipment and facilities:

1. More stress should be placed on the use of the stripfilm projector and the opaque projector.

2. The acquisition of a basic stripfilm library by each school, as finances permit, seems justifiable.

3. Attention should be given to making the projection equipment more mobile.

Teaching techniques. The following recommendations are made concerning teaching techniques:

1. Teachers should be given more aid in securing the audio-visual materials they want.

2. A previewing service established so that teachers could conveniently preview films and stripfilms would probably encourage more teacher to preview their material before using it in the classroom.

3. More preparatory activities, especially the pre quiz, should be employed by the teachers.

4. Additional attention should be given to the use of audio-visual materials for introductory and review purposes.

5. Teachers in the subject fields where projected teaching aids are being used very little should make a special attempt to extend the use of these aids in their classrooms. This extension need not be great and should be in keeping with other instructional techniques already being employed.

Summary. The recommendations outlined are directed towards achieving better organization of the audio-visual program, more financial support, and the wider employment of accepted teaching techniques in the presentation of audio-visual materials.

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APPENDIX

APPENDIX A

Dixon, Montana
December 28, 1950

Dear Mr.

Accompanying this letter are two forms: one an interview check-list and the other a questionnaire. In the near future I would like to visit your school and discuss your audio-visual program with you. If this visit will be acceptable to you, the interview check-list can be filled out at the time of my visit. The check-list is sent to you at this time in order that you may anticipate the nature of the information I seek. The questionnaire is designed to be filled out by all teachers in grades seven through twelve in your school. Please ask your teachers to complete this questionnaire as accurately as possible and I will collect them when I come to your school.

This survey is being conducted as part of a study to determine existing practices in the audio-visual programs of certain schools in Sanders, Lake, Mineral, and Missoula Counties. The data you are asked to furnish will be used in preparing a professional paper to be submitted in partial fulfillment of the requirements for the degree of Master of Education at Montana State University. Further, it is hoped that the results of this study will prove valuable to the

schools surveyed in aiding them to evaluate their present programs of audio-visual instruction, and in suggesting possible ways to bring about their more effective use. When the study is completed, each school will receive a summary of the findings along with recommendations judged to be most applicable to its particular situation.

Your cooperation, and that of your teachers, in furnishing this information will be greatly appreciated and will aid materially in designing a program for possible improvement in the use of audio-visual teaching aids in our area, and perhaps in the State.

Sincerely yours,

John B. Cage
Science Teacher
Dixon High School

APPENDIX B

INTERVIEW CHECK LIST

A SURVEY OF TECHNIQUES IN THE USE OF PROJECTED AUDIO-VISUAL
TEACHING AIDS IN TWELVE SELECTED HIGH SCHOOLS

PART I   Data concerning school population, audio-visual
equipment, audio-visual facilities and technical
audio-visual problems.

PART II   Data concerning administrative procedures in the
audio-visual program.

NOTE: All information given should be based
on the current year, 1950-51.

PART I

1.   What is the school population (grades 7 through 12)_____

2.   How many teachers are there in the school (grades 7
through 12) _____

3.   Which items of the following projection equipment does
the school now own?
      (a) projector, motion picture, 16mm, sound How
          many?_____
      (b) projector, motion picture, 16mm, silent How
          many?_____
      (c) projector, stripfilm How many?_____
      (d) projector, stripfilm, with 2 x2 slide
          attachment How many?_____
      (e) projector, standard slide, $3\frac{1}{4}$ x 4 How many?____
      (f) projector, opaque, with $3\frac{1}{4}$ x 4 slide
          attachment How many?_____
      (g) screen, projection, stationary How many?_____
      (h) screen, projection, portable. How many?_____
      (i) other projection equipment (specify)

4.   Does the school now own any of the following audio-
visual materials?
      (a) film, motion picture, sound, 16mm How many?____
      (b) film, motion picture, silent, 16mm How many?___
      (c) slidefilms, 35mm How many?_____
      (d) slide, glass, $3\frac{1}{4}$ x 4 How many?_____
      (e) slide, kodachrome, 2 x 2 How many?_____

5. How many classrooms does the school have? (grades 7 through 12) _____

6. How many of these classrooms can be darkened for projection purposes? _____

7. How many classrooms are used for projection purposes at least once a month? _____

8. Is the gymnasium, auditorium, or any non-instructional space used for a central projection room? _____

9. Which of the following problems, arising from the use of projected audio-visual teaching aids in your school, adversely affects the efficiency of your audio-visual program?

   NOTE: Indicate the more serious problems by checking them twice, and the less serious problems by checking them once.

   _____ (a) proper ventilation of classrooms during the showing of motion pictures and slides
   _____ (b) interference with other classes caused by noise of the sound motion picture projector.
   _____ (c) adequate darkening of classrooms for projection
   _____ (d) mobility of the projection equipment
   _____ (e) storage space for the projection equipment
   _____ (f) maintenance and care of projection ewuipment done in the school
   _____ (g) emergency repairs of breakdowns that require the services of a skilled technician
   _____ (h) difficulty in operating the projection equipment
   _____ (i) difficulty in securing desired materials for projection at the desired time.

PART II

1. Does one person coordinate the entire audio-visual program?_____

2. Is the coordinator released from some teaching duties to compensate for the extra work?_____

3. Is any extra salary attached to the position of co-ordinator?_____ How much?_____

4. What other faculty position does the coordinator hold? supt. or prin._____, science and math._____, shop and coach_____, other (specify)_____

5. Is money for the audio-visual program provided for in the yearly budget?_____, by the P.T.A. _____, other (specify)_____

6. About what per cent of the yearly budget is for the audio-visual program?_____

7. How were the present projectors and screens obtained? district funds_____, P.T.A. funds_____, other (specify) _____

8. From what sources are films, stripfilms and slides obtained?
      (a) the State Film Library How many? F____ FS____ S____
      (b) sponsored free films How many? F____ FS____ S____
      (c) commercial rental agency How many? F____ FS____ S____
      (d) other loan sources How many? F____ FS____ S____
      (e) purchased (this year) How many? F____ FS____ S____

9. Who selects and schedules films, stripfilms, and slides for the school? the coordinator_____, each teacher individually_____, each teacher through the coordinator_____.

10. Who operates the projection equipment? the coordinator____ one teacher _____, several teachers (how many) _____, students _____

11. Are the students organized in an audio-visual club?____

12. Does the audio-visual club include students from all grades? _____

13. Are these students given instructions in the care and operation of projection equipment? _____

14. Do the student operators have a schedule for duty?_____

15. Is there a central storage space for all projection equipment? _____

16. About how often has the breakdown of the motion picutre projector caused interruption of scheduled projection.____

17. What has been the cause of these breakdowns? lack of easily replaceable spare parts ____times, power failure ____times, mechanical failure of the machine ____times

18. Are provisions made for major repairs of the projection equipment in your school? by a teacher _____, by a local repair man _____, by an outside repair service_____

19. Are easily replaceable spare parts kept for all projection machines in use in your school? (cross out those not kept on hand) fuses, exciter lamps, tubes, projection lamps, photoelectric cells

20. Of the spare parts listed in question No. 19 which has need replacement most often? (list in order of most frequent replacement)

21. Is there an in-service training program carried on in your school to train teachers in the use of projected teaching aids? _____

22. How is the in-service training program carried on? in teachers meetings _____, by an audio-visual committee _____, in special classes _____, other (specify) _____

23. Is any publicity given the audio-visual program in your school? through the school newspaper _____, in the local newspaper _____, through the P.T.A. _____, other (specify) _____

24. Do you insure films, stripfilms, and other audio-visual materials when you return them to the lender? _____, by parcel post insurance _____, by railway express _____, other methods (specify) _____

APPENDIX C

QUESTIONNAIRE

A SURVEY OF TECHNIQUES IN THE USE OF PROJECTED AUDIO-VISUAL
TEACHING AIDS IN TWELVE SELECTED HIGH SCHOOLS

1. Have you ever had a college course in the use of audio-
   visual aids? _____ Quarter hours _____

2. Have you ever had training in the use of audio-visual aids
   as part of a college course? _____

3. Have you ever had any in-service training in the use of
   audio-visual aids?_____ through teachers meetings_____,
   in special classes organized in your school_____, through
   group discussions_____, other (specify)_____.

4. Do you think that special training is necessary in order
   to use audio-visual aids efficiently?_____

5. Do you think that the extended use of audio-visual aids
   in your classes would improve your classroom procedure
   sufficiently to justify the extra time and effort needed
   to carry out the program? _____

6. If an in-service training program were started in your
   school would you be interested in participating?_____

7. Do you preview the films, stripfilms and slides that you
   use?_____

8. For what purpose do you use projected teaching aids?
   to introduce new material_____, as supplementary material
   _____, to summarize your classwork_____.

9. What method do you use to prepare students for viewing
   projected teaching material? group discussion_____, pre
   quiz_____, providing a list of "things to look for"_____,
   by reviewing concepts concerned_____, other (specify)
   _____.

10. How do you follow up the use of projected teaching aids?
    by group discussion to clear up doubtful points_____, by
    a quiz_____, by summarizing the film, filmstrip, or other
    material yourself_____, other (specify)_____.

11. In which of your subjects do you use projected teaching
    aids? (estimate as closely as possible based on the past
    sixteen weeks of school, and your plans for the remainder
    of the year.)

_____ subject	How many this year?	films	filmstrips	slides
_____	How many this year?	____	_____	_____
_____	How many this year?	____	_____	_____
_____	How many this year?	____	_____	_____
_____	How many this year?	____	_____	_____

12. In which of your subjects do you use the opaque projector?
_____, times per year___   _____, times per year___
subject   subject

_____, times per year___   _____, times per year___

_____, times per year___   _____, times per year___

13. Which of the following reasons keeps you from using more projected teaching aids? difficulty in operating equipment, or getting someone to operate it for you_____, difficulty in moving and setting up the equipment_____, do not have time to use projected teaching aids_____, cannot get appropriate material at the right time_____, other (specify)

14. Do you use a projected teaching aid when it becomes available at a time when you are not studying the material covered by the aid?_____

15. Do you give the students a particular objective to be gained from viewing the projected teaching aids?_____

16. Do you elaborate on concepts that the projected teaching aid does not cover thoroughly?_____.

17. Do you attempt to select projected teaching aids on the basis of the educational level of the learner?_____

18. Do you encourage class participation when viewing strip-films or slides?_____

19. Do you instruct students in how to get the most out of viewing projected teaching aids?_____

20. Do you ever re-show a projected teaching aid, in whole or in part, to emphasize an important concept or to clear up a doubtful point?_____