UTILIZATION OF PROJECTED MATERIALS
IN SCIENCE AND SOCIAL SCIENCE CLASSES IN
IOWA HIGH SCHOOLS

BY

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Dean of Graduate Division
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CHAPTER I

INTRODUCTION

With the cessation of hostilities of World War II came some of the most powerful tools of instruction yet devised. It had been discovered that the training film had great potential powers of communicating information to even the lowest intelligence groups. It was given powerful impetus because it cut down the training time impressively. Information was brought to the classroom which could be had in no other way.

The usefulness of this medium had been demonstrated years before. However, little progress had been made since its adaptation to school instruction. Visual departments and systems of distribution were in existence, but the day-by-day instruction in most classrooms was carried on with the help of an infinitesimal amount of visual aids.

Today, several years after this medium has proved its potentiality, it seems conditions continue to exist which account for comparatively little progress being made in its usage.

Wittich calls attention to this when he asks: "Are we sure . . . we are making the best of the advantages which
today audio-visual instruction materials, equipment, and techniques hold?"

Problem

A school owns a 16 mm. sound projector and a 35 mm. combination slide-filmstrip projector. Membership in the county library gives it access to nearly nine hundred filmstrips and about seventy 16 mm. movie films. Catalogs from colleges, universities, and commercial film libraries are centrally located and easily accessible. In addition there are sources of free projected materials. A coordinator of audio-visual instruction has been selected and eight student operators have been trained to handle the equipment. However, these two projectors are seldom used.

A problem arises for the coordinator because he knows that the teachers are not utilizing these materials which speed up education and make it richer, more useful, and more enduring.

The purpose, then, of this study, is to investigate the extent of the effective use of projected educational materials in the classroom in the fields of science and social science in Iowa high schools of less than two hundred enrollment. It will also be the purpose of this

\footnote{W. A. Wittich, "Halfway Up: Another Half to Go," See and Hear, V (January, 1950), S.}
study to try to determine the apparent and stated reasons why greater use of these materials is not being made by teachers in these schools. The findings should be of value to all educators in small high schools who are interested in knowing the reasons teachers are not effectively using this medium of instruction.

**Scope and Preview of the Study**

The study includes high schools in Iowa of two size classifications: (1) one hundred students or less, and (2) 101 to two hundred students.

The reason for including only two classifications is to clarify the survey by providing a homogeneous grouping. Schools of these sizes were selected because only ninety-four, or about 11 percent, of the 334 approved school systems in the state of Iowa have a high school enrollment of more than two hundred. It is believed the problem will be more prevalent in the smaller schools.

Science and social science areas were selected because it was felt that an abundance of materials are available which are easily adapted to these fields. Lack of availability, then, should not be encountered as frequently as in other areas of instruction. This is emphasized by Moore in writing about the visualized science classroom.

There is no school subject that lends itself more effectively to the use of audio-visual materials than
does science. . . . The variety of audio-visual aids usable in the teaching of science is practically limitless.¹

Walsh sets forth a similar idea in writing about abusing educational films in junior high school classes.

With the wealth of materials and topics available, science lends itself readily to visual aids. Its areas are pointed and facilitate integration with available projection material.²

Hoban, Hoban, and Zisman wrote about the social sciences in pointing out that the teaching film makes it easier for the great educators to translate their visions into reality. "Visual education enriches the curriculum by expanding some subjects, especially the social sciences."³

It is an assumption basic to this study that projected educational materials are not being used as effectively as possible. An attempt will be made to determine the reasons for such a condition. Possible barriers are believed to be administrative, financial, organizational, individual, and philosophical in nature.

Barriers which are believed to be administrative in nature include: (1) administrative opposition; (2) lack of

¹Melba Moore, "Visualizing a Science Classroom," See and Hear, V (March, 1950), 18.

²William J. Walsh, "Are We Using or Abusing Educational Films in Our Junior High Science Classes?" School Science and Mathematics, LI (June, 1951), 473.

equipment; (3) lack of knowledge of sources; (4) inaccessibility of materials or equipment; and (5) lack of space or darkened room to show audio-visual aids.

The only barrier which is believed to be financial in nature is the lack of an adequate budget for this purpose. The barrier caused by lack of organization is that of having no students trained to set up and operate equipment. Barriers which it may be necessary for the individual teacher to overcome are: (1) lack of training in this area as a teaching procedure, and (2) fear of running machines. Other barriers which it may also be necessary for the teacher to overcome, but which the author believes are an indication of the individual's philosophy of education, include: (1) lack of confidence in this medium of instruction, and (2) lack of time to order, to preview, and to use properly these materials.

The following definitions are offered to help clarify the study.

Visual aid: any picture, model, object, or device which provides concrete visual experience to the learner for the purpose of: (1) introducing, building up, enriching, or clarifying abstract concepts, (2) developing desirable attitudes, (3) stimulating further capacity on the part of the learner.\(^1\)

\(^1\)Ibid., p. 9.
Projector: the mechanical device which projects the images of the motion picture film, filmstrip, glass slide, etc., so as to produce on a screen an enlarged image for group use.¹

Projected educational materials: any visual aid used for instructional purposes and shown by means of a projector.

Civilization may be said to exist solely by virtue of the means of communication. People communicate when they wish to effect a desired adjustment or influence upon other people. There has been a tendency to think of communication in terms of words, and words only. But times have changed. Numerous new ways of conveying ideas have been provided. A teacher can no longer use a single outmoded medium of communication and expect to be effective. His students are being influenced by outside learning experiences found in the modern halls of movies, television, and radio.

Education must change with the times. Teachers must change with education. The fact that a teacher was not instructed by means of audio-visual aids is no justification for his not using these materials. The armed forces proved the potentiality of these aids in training twelve million men and women in over fourteen hundred specialized jobs in a wide variety of subject matter. Eric Johnston ¹Ibid., p. 300. June 1947 in an article which appeared a few years ago.
CHAPTER II

SURVEY OF LITERATURE

Civilization may be said to exist solely by virtue of the means of communication. People communicate when they wish to effect a desired adjustment or influence upon other people. There has been a tendency to think of communication in terms of words, and words only. But times have changed. Numerous new ways of conveying ideas have been provided. A teacher can no longer use a single outmoded medium of communication and expect to be effective. His students are being influenced by outside learning experiences found in the modern media of movies, television, and radio.

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World War II gave the teaching film powerful impetus. In a single month in 1945, according to one Army estimate, training films were shown to a soldier attendance of 18,500,000 in continental United States, to 5,300,000 in Europe, and to large numbers in other theaters. The films covered every subject from sanitation to air bombardment—and they cut down training time impressively. Knowledge of these facts alone fails to provide the necessary incentive. The importance of these facts must be recognized if education is to benefit from them. Seven hundred and fifty school systems throughout the nation were asked to name the major barriers to wider and more effective use of audio-visual materials. The statement most frequently made was: "Teachers not interested—not prepared to make effective use of audio-visual aids." Conclusions based upon the barriers mentioned were as follows:

If this is true—and the conclusion finds support in most of the recent literature of the subject—a tremendous program of teacher education is indicated which will include both specialized instruction in the colleges of teacher-training and locally arranged programs for on-the-job training. The latter cannot be ignored, since the professional education of the great majority of teachers now working in the public schools included virtually no instruction on the use of newer multi-sensory aids. . . . Probably the initial step toward a more effective program in many communities should be a well planned program of in-service education for teachers which would awaken their interest in audio-visual procedures and create on their part a genuine insistent demand for suitable multi-sensory materials.


The trend in audio-visual instruction is illustrated effectively by previous studies made in this area. A review of professional literature indicates that several studies have been made in areas closely associated with and having problems similar to those encountered in the present study.

One important development which indicates the trend to utilize audio-visual materials is the growth of state leadership during the past two decades. This fact, coupled with the growth in city and county systems, was evidenced in a survey in connection with the "Mid-Century Report on the Progress of Audio-Visual Education" conducted by See and Hear in 1950. As nearly as could be determined twenty-one states then had state officers in audio-visual instruction, of which there were reports on fourteen. Of these fourteen, two were established prior to 1930, five dated from the period 1941-1945, and seven were established during the three year period from 1946-1948. This indicates that as many were established in the three later years as were established in all previous years. It is concluded that some two-thirds of the states have an effective level of state leadership in audio-visual education. 2


There are noteworthy examples of state activity in audio-visual education where considerable progress has been made since the war. Outstanding are Arkansas (state audio-visual budget of $175,500); California (state audio-visual budget $1,010,000); Ohio (state audio-visual budget $156,000); Oklahoma (state audio-visual budget $125,000); Texas (state audio-visual budget $42,360); and Virginia (state audio-visual budget $62,793). Montana, though small in size of its school population, shows encouraging promise with an annual appropriation for audio-visual materials of $21,500. Georgia has made recent progress (and can make more) with appropriations totaling $175,000.1

An important part of the above nation-wide survey gives some specific illustrations of needs for teacher utilization of audio-visual materials. Ranked according to their frequency of mention, they are:

1. Better means of getting equipment and materials into the classroom of every teacher.

2. Better preview evaluation and selection means.

3. Acquire easier and more simplified modern equipment.

4. Need for better teacher training in which proper utilization knowledge is fundamental.

5. Some means of more carefully authenticating materials.

6. Active audio-visual public relations program.

7. Need for greater budgets.2

The need for better coverage and the existing struggle concerning producers who are going one way while teachers are

1 "Where Does Your State Stand?" See and Hear, V (April, 1950), 21.

going the other constitute items of least importance insofar
as their frequency of mention is concerned.

Another survey conducted to determine the number of
movie projectors in high schools in the United States has
some interesting results. This survey, under the direction
of Seerly Reid, was conducted from a master list of twenty-
five thousand high schools in the nation. A 10 percent
sample of 24,314 public high schools was mailed question-
naires in February, 1949. Follow-ups were sent in March
and again in April to non-respondents. This procedure yield-
ed a 93.3 percent return. The survey revealed that 84 per-
cent of all high schools in the United States have 16 mm.
projectors, with an average of 1.33 per school. Forty-seven
percent of these have been purchased with non-tax funds.
Sixteen percent of the projectors were acquired before 1940;
29 percent during 1940-1945; and 55 percent after 1945. The
84 percent of the high schools which have projectors contain
96 percent of the high school students of the nation. This
theoretically means that twenty-four out of every twenty-five
students in high school can now see educational films. While
84 percent of all public high schools have projectors, it
should be noted that 96 percent of urban high schools and
80 percent of rural high schools have projectors. However,
of the 20,471 public high schools with projectors, 13,855 or
68 percent are in rural communities. There are an average
of 2.09 projectors among schools with enrollments of five
hundred or more as compared with an average of only 1.04
among schools with less than one hundred students. More
significant, however, is the fact that in the small schools
each projector serves an average of fifty-nine students,
whereas among large schools each projector serves an average
of 531 students. ¹

A survey conducted to determine if American colleges
and universities are using audio-visual instruction con-
cluded that the majority of these institutions are still
using the teaching methods of twenty, thirty, or fifty years
ago. One hundred and sixty-nine questionnaires were sent
and 156 returned, fully or partially completed. This gave
a 90 percent return and gave a fairly accurate picture of
the status of audio-visual materials in these institutions
of higher learning. In 148 answers to a question concerning
separate departments of audio-visual materials, eighty-nine
indicated they had no separate departments. In addition,
twenty-one had audio-visual committees to deal with problems.
Only forty-seven out of 119 indicated audio-visual aids
should be administered by separate departments. Fourteen of
these were in agreement for a separate department under the

¹Seerly Reid, "How Many Movie Projectors in U. S.
High Schools?" Educational Screen, XXIX (June, 1950),
242-243.
extension service. Only twenty-five of 111 indicated the materials should be handled by the library. The only encouragement in the survey was that nearly 75 percent of the administrators replying were dissatisfied with their audiovisual program. The conclusion in the words of the author: "Where there is dissatisfaction with the status quo, there can be improvement."²

An investigation by De Kieffer in the status of teacher-training in the audio-visual fields in 1947 presents the content of introductory audio-visual courses. The distribution of units or topics and the percentage of all courses which included each item are as follows:

<table>
<thead>
<tr>
<th>Unit or Topic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Utilization of materials</td>
<td>97.0</td>
</tr>
<tr>
<td>2. Selection of materials</td>
<td>96.0</td>
</tr>
<tr>
<td>3. Operation of equipment</td>
<td>95.0</td>
</tr>
<tr>
<td>4. Evaluation of materials</td>
<td>93.0</td>
</tr>
<tr>
<td>5. History and philosophy of audio-visual education</td>
<td>87.0</td>
</tr>
</tbody>
</table>

¹E. Van Allen, "Are Universities Teaching AudioVisually?" Educational Screen, XXVIII (September, 1949), 305.
²Ibid., p. 325.
Unit or Topic | Percentage
--- | ---
6. Administration of audio-visual programs | 78.0
7. *Production of nonphotographic aids | 63.0
8. *Production of photographic aids | 44.0
9. *Radio script-writing, transcriptions, and recordings | 35.0
10. *Other types of production | 21.0
11. Other items | 12.0

*Production activities were separated into four groups marked * for more precise information on those activities.

Concentration of emphasis on the first five items is evident. The probable reason for this is that all five pertain to the basic problem, that teachers need to be able to select and to use materials effectively. That ability is fortified with basic understanding by item five.

In March, 1946 a survey was conducted to discover the ten features most often mentioned as characteristics of armed forces training observed by educators in their armed forces experience and worthy of augmented emphasis in civilian education. Inquiries were sent to three hundred individuals and 258 responded. The respondents included those who had served in various branches of the Army and Navy, generally as instructors, supervisors, psychologists, or who were in some way provided experience and observation of training programs. Over two hundred were commissioned
officers of whom more than one hundred were above the Army
rank of captain or the Navy rank of lieutenant. Most of
these had returned to civilian positions in forty states
which ranged from high school teaching positions to college
presidencies. Salient differences between wartime training
and peacetime education were assumed as background and were
not taken to form an explicit part of the inquiry. The in-
quiry included a check list of characteristic features of
armed services training. The respondent was to indicate:
(1) if he had observed each feature in his service experi-
ence, and (2) to what extent he believed each feature worthy
of augmented emphasis in civilian education. The study was
limited chiefly to officer candidate training, flying, techni-
cal and gunnery training, and other specialized training
above the basic level. 1

The ten characteristics in their order of frequency
of affirmatives were as follows:

1. More and better use of visual aids.
2. Clarity and definiteness of aims.
3. More 'learning by performance.'
4. Eliminating nonessential content.
5. More frequent achievement testing.

---

1 M. M. Chambers, Opinions on Gains for American
7. Short intensive courses open to students qualified and wanting them.
8. Small classes and individual work.
10. Helpful supervision of instruction.¹

The respondents were requested to make responses on the bases of: (1) all experiences and observations in wartime training of the types indicated, and (2) all knowledge of American peacetime education at all levels and in all institutions, regions, or systems. "More" or other comparative adjectives meant "more in the armed services as observed by the respondent, than in civilian schools of which he had knowledge." Comments made on returning inquiries were not uniform and were sometimes contradictory.²

Those pertaining to the first ranking feature, "visual aids," were as follows:

The Army and Navy went all out on visual aids and far surpassed civilian education. Armed services did an excellent job with visual aids.
Much of the use of visual aids was very dull. Carried to extremes; often stereotyped and senseless.³

The need for and adaptability of these ten features in civilian education was further tabulated. Those tabula-

¹Ibid., p. 15.
²Ibid., pp. 15-16.
³Ibid., p. 16.
tions for "More and Better Use of Visual Aids" were as follows:

<table>
<thead>
<tr>
<th>Needed and Adaptable</th>
<th>In General Education</th>
<th>In Specialized Education</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(All Levels)</td>
<td>Vocational, Technical, or Professional Education</td>
</tr>
<tr>
<td>Yes, to great extent.</td>
<td>160</td>
<td>181</td>
</tr>
<tr>
<td>Yes, to moderate extent.</td>
<td>65</td>
<td>37</td>
</tr>
<tr>
<td>Yes, to small extent.</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>No.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>No response.</td>
<td>9</td>
<td>19</td>
</tr>
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</table>

Subjoined remarks were thoughtful, not unmindful of obstacles, and not uncritical:

An outstanding feature of service training which should be adopted by civilian education.

A real contribution by the armed services.

Army far ahead of civilian institutions.

This is one really outstanding example for civilian education.

Will produce profound changes in public education.

Over-all, the services were forced by lack of time to accelerate training. They accomplished this by using visual aids and on-the-job training. In general, public school districts are not in favor of large expenditures for visual equipment. Much of this equipment—now surplus—might be sent directly into school channels only.

More and better visual aids would make for better teaching, on all levels. But audio-visual techniques can only supplement slightly the ordinary process of teaching people to think.

In general education there is a very wide range from subject to subject and course to course in the possibilities of effective use.

Use of visual aids was usually a waste of time until training in proper use was given.

Means of financing and adapting to local needs is a problem.

Cost is a factor in public schools, whereas it was less operative in the armed forces.
More money is requisite to many desired improvements.
This program must receive national support.
Films and slides are overrated.
Visual aids have become almost a racket. 1

A few of the typical critical responses were the following:

Some films full of diagrams and figures were poor.
Silent motion pictures were often too long and boring.
Equipment was sometimes obsolete, and sometimes poorly maintained.
Some of the instructors did not make use efficiently of the devices supplied.
Sound films sometimes fell short of maximum results because they were not presented with a question-and-answer period before and after— a 'build-up' and a conclusion.
Slides were often too complex and very uninteresting. 2

One of the primary tasks of the Experimental Section of the Research Branch of the Army was to provide evaluation of motion pictures prepared by the Information and Education Division of that branch. This constituted a large scale attempt to utilize modern socio-psychological research techniques in evaluation of educational and "indoctrination" films. The principal criteria of "effectiveness" used in evaluation were whether or not they succeeded in imparting information, in changing opinions in the direction of interpretations presented, and in increasing the men's motivation to serve. No

1 Ibid., p. 21. 2 Ibid., p. 47.
acceptable behavioral index of "morale" or motivation to
serve was developed to determine the relatively immediate
effects of films. An overt behavioral criterion was pos-
sible in only one study. This was a study concerning the
effects of "audience participation" in which actual perform-
ance in using correct letter-name associates in the phonetic
alphabet was used as the criterion of effectiveness.

The criteria used revealed actual changes produced
in the audience by the films. "Why We Fight" films were
evaluated in terms of the extent to which factual knowledge
and opinion concerning the war were altered by seeing the
films. Most of the studies obtained information from the
soldiers both through questionnaires and interviews. Men
readily expressed liking or disliking the films, but were
inarticulate as to their reasons and had few suggestions
for improving the films.\(^1\)

In other studies, interest was the only response
considered relevant. For these studies more elaborate
methods of recording were used. These included the "program
analyzer" which recorded likes and dislikes during the presen-
tation of the film. It was recognized that the amount of
interest or the extent of approval provided only supplementary

\(^1\) Carl I. Hovland, Arthur A. Lumsdaine, and Fred D.
Sheffield, *Experiments on Mass Communication*, III, pp. 247-
248. Princeton, New Jersey: Princeton University Press,
1949.
information and did not constitute a true measure of its
effectiveness. The starting point of the investigation was
a content analysis of each film to be studied. This was
coupled with intensive discussion with individuals who had
prepared the script concerning their objectives in producing
the film. Success of measurement was felt to be directly
related to the precision with which the intended objectives
were formulated. In the case of orientation films precision
was sometimes lacking in definition by the producers of
what their films were intended to accomplish. Consequently,
the criteria used in the evaluation of these films were the
over-all objectives of the orientation program, combined
with inferred objectives based on content analysis as an
index of what the producers were trying to accomplish. ¹

The results of the survey may be summarized as
follows:

The films had marked effects on the men's knowledge
of factual material concerning the events leading up to
the war. The fact that the upper limit of effects was
so large—as for example in the cases where the correct
answer was learned and remembered a week later by the
majority of the men—indicates that highly effective
presentation methods are possible with this type of
film.

The films also had some marked effects on opinions
where they specifically covered the factors involved
in a particular interpretation, that is, where the
opinion test item was prepared on the basis of film-
content analysis and anticipated opinion change from
such analysis. Such opinion changes were, however,
less frequent and, in general less marked than changes
in factual knowledge.

¹Ibid., pp. 248-250.
The films had only a very few effects on opinion items of a general nature that had been prepared independently of film content, but which were considered the criteria for determining the effectiveness of the films in achieving their orientation objectives.

The films had no effects on items prepared for the purpose of measuring effects on the men's motivation to serve as soldiers, which was considered the ultimate objective of the orientation program.1

Other possible factors which may have accounted for the lack of effects of the films upon general opinions and upon motivation are discussed. It may have been that a single fifty minute presentation was too small an influence to produce noticeable change in deep-seated convictions. In some cases the lack of effects may have been due to the diffusion of coverage rather than the concentration upon a few well-chosen targets. It is possible that the lack of effects may have been due simply to the fact that the attitudes and motivations investigated in these studies could not be appreciably effected by an information program which relied primarily upon the facts to speak for themselves.

The last hypothesis calls into question the basic assumptions upon which the Army orientation program was based: (1) that giving men more information about the war and its background would produce more favorable opinions and attitudes, and (2) that improvement of opinions, attitudes, or interpretations about the war would lead to

1Ibid., pp. 254-255.
higher motivation or greater willingness to accept transformation from civilian to Army life.

The results of the research cast considerable doubt on the first of these assumptions. The films produced sizeable increments in information, but affected almost no significant changes on the more general opinion items designed to measure change in the orientation program's objectives. This was supported by other studies which indicated only a slight correlation between scores on information tests and orientation opinions. No evidence was provided by the experimental studies bearing on the second assumption, concerning the relationship between changes in opinions and motivation. It was difficult to know whether to attribute change in motivation to change in opinion.

Results showing the relation between the audience's evaluation of a film and its effect on their knowledge and beliefs showed that men who most liked a film tended to be most affected by it. It was difficult to determine which was the cause and which was the effect. To demonstrate a correlation between liking and amount of effect did not answer the question since audience responses or evaluations could not be treated as independent variables. They were responses that could be related to other responses or change in response, but there remained the possibility that both responses of the audience were direct effects of the film
rather than that one response had a casual effect on the other. It was found that men who regarded the film as propagandistic were less affected but again the nature of casual relationship was difficult to establish from these results, since the groups compared may have been initially different to change.  

Another pertinent study was made to determine what skills and knowledges were regarded as important for the classroom teacher who would make proper use of audio-visual materials. The study was based upon the belief that this information could be given by a composite summary of opinions of: (1) experienced teachers, (2) audio-visual supervisors, (3) general supervisors, and (4) administrators. An "Audio-visual Instructional Aids Check Sheet" presenting short statements concerning audio-visual instruction skills and knowledge was prepared. It included four sections: (1) mechanics, (2) utilization, (3) production, and (4) facilities. Each section was divided into two parts: (1) items dealing with skills, and (2) items dealing with knowledge. Each item was rated according to the individual's appraisal of its importance to the teacher, even though he may have been a principal or superintendent. The scale used for filling in the spaces was: (1) of great importance, (2) of

1Ibid., pp. 255-257.
considerable importance, (3) of average importance, (4) of importance only in special cases, and (5) of little importance. At the same time they were rating each item, they were to indicate statements applicable in the "skills" or "knowledges" columns which they could do or did know.

A total of 244 check sheets were sent out; forty-four went to supervisors or directors of audio-visual aids programs; and the remaining two hundred went to teachers, supervisors, and administrators registered in summer school courses at the University of Chicago, Northwestern University, and the University of Wisconsin in 1945. A total of 199 sheets were returned, of which forty-nine were found to be improperly filled out and therefore not suitable for use. General characteristics of individuals as determined from the responses were:

- Average teaching experience 13.75 years (Range of experience: one to thirty-eight years);
- Sixty-three respondents taught at the elementary level;
- Sixty-eight respondents taught at the secondary level;
- Thirty-seven respondents taught at the college level;
- Fifty-three percent of the persons had some responsibility for the coordination of the audio-visual program;
- Forty-four percent of the persons had had special training in the use of audio-visual aids.

Twenty-two percent of the persons were taking training; and
Thirty-three percent of the persons had had no formal instruction in this area.

The respondents were divided into four groups: (1) seventy-one sheets were from classroom teachers; (2) twenty-four sheets were from classroom teachers who had additional responsibilities of coordinating audio-visual materials in their own schools or systems; (3) twenty-seven sheets were from supervisors or directors of audio-visual programs on a full-time basis; and (4) twenty-eight sheets were from superintendents, principals, and general supervisors.

It was discovered that the teachers were interested in learning to operate various types of equipment. The consensus of opinion was that more emphasis should be placed on equipment other than the 16 mm. projector. Ninety percent of those responding could operate the 16 mm. projector, while only 56 percent could operate the 35 mm. sound and silent filmstrip projector. Percentages of respondents who had skills or knowledge in this area were low. More emphasis in skills and in knowledge of utilization was recommended.

Increased emphasis on evaluating results of using audio-visual aids and preparing and using study guides with audio-visual aids was also a recommendation. Only 65 percent of the respondents had knowledge of sources of audio-visual materials.

\[1\text{Tbid., p. 551.}\]
Teachers were more interested in having ready-made materials than in producing their own. An interest in safety practices to be observed in handling electrical equipment ranked high. A desire to have more emphasis placed on what the teacher can do to improve existing facilities was indicated in the survey.

A more recent study grew out of an interest in the contribution of two factors which influence the teaching effectiveness of films. These factors were motivation and participation.

'Motivation' refers here to the extent to which pupils are alert, interested, and trying to learn the material presented in a film. 'Participation' refers to the extent to which pupils are responding actively by practicing or rehearsing the things to be learned as the material is presented.

Psychological and educational theories of learning underlined the importance of these factors in determining how much a person would learn in any given situation. The importance of these factors seemed obvious: (1) one has to make an effort to learn effectively, and (2) one learns only by doing.

As a preliminary attack, the present study investigated the contribution of two specific procedures:

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1Tbid., pp. 551-554.

1. A procedure which attempted to increase pupils' motivation to learn specific material in a film by the use of questions designed to arouse curiosity concerning the facts about to be presented; and

2. A procedure which required pupils to participate more actively during the film showing by answering questions about various points just after they were presented.¹

The results of the study measured only the added contribution to learning produced by specific procedures of the type employed. The subject of the film chosen was "The Heart and Circulation of the Blood." The material was divided into seven units. Different versions of the film were used. Each had the same factual presentation with identical pictorial material and accompanying commentary. The versions were as follows: (1) straight factual presentation, with neither motivating nor participating questions; (2) factual presentation supplemented by participation questions answered by pupils after each unit of material; (3) factual presentation supplemented by motivating questions preceding each unit and participation questions following each unit.

Approximately one hundred and fifty tenth and eleventh grade students were used in the study. They were assigned to groups for testing each version. Each group was balanced with respect to grade level, initial test

¹Ibid., p. 373.
score (before the film), general ability, sex, and other factors. A factual test containing forty multiple choice questions was given to each student. The test was given to the students a week before the showing to determine how much the students already knew about the subject. It was given a second time to determine how much they had gained from seeing the film. The amount of information gained from each version was indicated by the difference between the before and after tests.

A control group was also tested and retested after the same interval of time as the other groups but without being shown the film. The average remained the same. This indicates that any gain in factual information should be attributed to the film. All groups tested 39 percent before the film was shown.¹

The test scores after showing the film and according to the version shown were as follows:²

<table>
<thead>
<tr>
<th>Version</th>
<th>Score</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factual presentation only</td>
<td>47.2</td>
<td>8.2</td>
</tr>
<tr>
<td>Factual presentation plus participation</td>
<td>51.2</td>
<td>12.2</td>
</tr>
<tr>
<td>questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual presentation plus motivating</td>
<td>49.5</td>
<td>10.5</td>
</tr>
<tr>
<td>questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual presentation plus motivating and</td>
<td>53.0</td>
<td>14.0</td>
</tr>
<tr>
<td>participation questions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Ibid., pp. 373-375. ²Ibid.
It was determined by the results of this testing that the addition of participation questions ranked second only to the factual presentation of the film. This device showed marked superiority on specific questions. The device employing motivating questions only made at best a limited contribution to the effectiveness of the film. An additional group was tested to find out how much was learned by showing the basic film presentation twice. The single showing with the participation procedure and the double showing without the participation procedure were about equally effective although the latter required considerably more time.

The results of the study—particularly those bearing on effectiveness of participation questions—suggest that teachers may use existing films to a greater advantage by interspersing such questions between sections of film. The results obtained with the additional group to whom the film was shown twice also helped to document the advantage that can be produced by the frequently used practice of showing a film more than once. However, the way in which this may be most effectively done remains a problem for further investigation, particularly since in the present study double showing of the factual material alone was found to be more effective than a single showing supplemented by the participation questions.1

To aid in correcting misinterpretations connected with the use of audio-visual aids, a survey was conducted in Linking County, Ohio. This was done by examining the aids best suited to instruction in the social studies. It emphasized their value on the basis of modern ideas of edu-

1Ibid., p. 383.
cation and psychological principles underlying their use. The author of this study concludes that there is a need for teachers to form more definite philosophies of education and of methods in teaching the social studies. He further concludes there is a need for teachers to secure a more thorough understanding of the purpose of audio-visual aids in order to furnish a sound basis for their use.¹

Recommendations for meeting these needs are:

1. Teacher-training in usage.
2. Centralization of materials and equipment for teachers' convenience.
3. Securing of equipment which seems too expensive for smaller schools.
4. Formation of clear, vivid objectives in each subject matter to aid producers of materials and equipment.²

Probably the most extensive study conducted in the area of audio-visual instruction was that of the National Society for the Study of Education.³ The status of audio-visual programs in rural areas on a nation-wide basis has been determined as a part of this study.

Information was gathered from a list of rural schools with good audio-visual programs as recommended by state

²Ibid.
departments of public instruction, university extension divisions, and colleges in various states. An analysis of sixty-nine usable returns gave some indication of what was considered good programs in these areas.

The sixty-nine schools were distributed through twenty-nine states representing all major regions of the United States. The number of students in the schools reporting varied from fourteen to eighteen hundred enrollment. The largest school reported the only full time director of audio-visual education while there were twenty-six reporting part time directors. Persons most generally responsible for the program were the principal and the classroom teacher. Usually the science teacher was assigned this duty.

Most equipment was owned by the individual schools and operated by students and teachers. Motion-picture projectors and filmstrip projectors were generally most used. About three-fifths of the filmstrips and approximately one-third of the 16 mm. films used were owned by the individual schools or the local system.

In twenty-seven schools, the teachers selected the materials they used; in eighteen, the teachers and principal jointly selected the materials. In others the principal, or a teacher committee working with students made the selections.

All sixty-nine of the schools had at least one room
equipped for using audio-visual aids. One school reported an audio-visual room for each department. Two schools reported special rooms for audio-visual instruction.

In sixty-one schools the program was considered inadequate. In three schools it was characterized as fair, and in three it was considered as adequate.

It was concluded from this survey that if this was a reflection of the best conditions in the best situations in twenty-nine states represented, the audio-visual program in the rural schools throughout the nation was most inadequate.

It is evident from the surveys which have been cited that there is a necessity for improvement in audio-visual instruction originating in the philosophy of the individual classroom teacher and carrying through to the college administrator. The inadequacy of educators in accentuating modern media of communication is causing the profession to fail in utilizing methods which already have been proved potentially the most powerful means of conveying ideas to all levels of intelligence. If some reasons for this lack of utilization are made manifest by this study, its purpose will be realized.

CHAPTER III

GATHERING OF DATA

In an attempt to determine the practice of teachers using projected educational materials, questionnaires were sent to two hundred high school science and social science teachers in Iowa. One hundred were sent to schools with one hundred enrollment or less and one hundred were sent to schools with 101 to two hundred enrollment. Of the one hundred sent to the smaller schools, sixty were returned; of the one hundred sent to the larger schools, sixty-eight were returned. This constitutes a 64 percent return of the questionnaires sent.

The Questionnaire

The questionnaire was prepared by the author who has served two years as coordinator of visual instruction in an Iowa high school with an enrollment of 127.

Ten questions were selected on the basis of difficulties encountered by the author during this experience. It was felt that these questions were inclusive enough to present a picture of the situation that exists. These questions and the reasons for their selection will be reviewed at this time.
How long have you been teaching?—This question was selected because the author feels this is often an obstacle to the use of new methods and materials. This view is shared by others.

Teachers who have developed confidence and security in teaching by a certain method may become fearful or insecure when required to learn a new way of teaching. They may enjoy a fine reputation as drill-masters who make students learn the hard way. Then along comes a new method in which interest, meaning, and understanding are paramount.¹

How much training have you had in the use of audio-visual aids as a teaching procedure?—The majority of teachers graduating from our teacher training institutions are not receiving training in the use of audio-visual materials as a medium of instruction.

Not more than 25 percent of the nation's prospective teachers, those now preparing for the professions, are receiving any instruction in the use of audio-visual materials.²

It has been the experience of the author that the teacher, in nearly every case, must be shown how to use the equipment. Some teachers who have had instruction in using audio-visual materials have retained very little of the skill and technique because the need for the course was not immediate. Consequently, it had little meaning for the teacher.


In speaking of obstacles with which the teacher is confronted, Nathan Neal suggests:

These obstacles, rising generally from inexperience, are most frequently described as follows: (1) don't know what films are available, (2) don't know what to do about choosing suitable films, (3) aren't sure how to use films effectively in teaching. ¹

These could be overcome considerably by a course in the use of audio-visual educational materials if the teacher felt a definite need for such instruction before enrolling in the course.

Indicate the type of training you have had.——Here the teacher was expected to suggest whether the training had been obtained at a college or whether it had been in service training given through the school system by which he was employed.

Do you use projected audio-visual materials in your classroom?——If the teacher answered this question affirmatively he was asked to answer all of the remaining questions. If the answer was negative, he was asked only to answer the last question. The purpose of the question was to determine how many teachers were using no projected audio-visual materials.

If answer is "yes" to the preceding question check the items which apply to the use you make of these materials.——The teachers were given four choices: (1) as a vital teaching

¹Ibid.
aid to the subject being taught; (2) as extra material not necessarily associated at the time with the subject matter being taught, or only partially so related; (3) for entertainment purposes only; or (4) shown to whole school whenever material is available.

There may be danger in using projected materials when they are not shown in connection with a unit or as an instructional aid to a particular subject. Students soon assume that a projector being set up means that they are going to be excused from doing some work. It is the teacher's responsibility to see that the entertainment attitude does not dominate, particularly with 16 mm. movies. Preparation is emphasized by Hoban and others in writing of effectiveness.

The effective use of visual aids requires planning, making ready the materials, and knowing the precise moment, the proper place, the most effective way to introduce the visual aids.1

**Approximately how often do you use projected audio-visual aids?**—This question should have given an indication of the part projected audio-visual aids play in the curriculum. They should be used frequently if they are recognized as an integral part of the instruction.

**Indicate which of the following pieces of equipment are available for your use.**—Seven projected visual aids

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1Hoban, *Visualizing the Curriculum*, p. 274.
were given and the teacher was requested to check those which were available to him. This was done to verify the popularity of certain pieces of equipment. The choices were:

(1) 16 mm. sound, (2) 16 mm. silent, (3) 2 x 2 slides, (4) 3 x 4 slides, (5) 35 mm. silent filmstrip, (6) 35 mm. sound filmstrip, and (7) opaque projector.

How is projected audio-visual material obtained for your classroom usage?—The teachers were given three choices: (1) teacher secures own material; (2) coordinator obtains audio-visual material for classroom teacher as he requests it; and (3) coordinator provides certain audio-visual material to be used by teacher at a specified time.

It was felt that this question would give some underlying causes of lack of utilization of audio-visual materials.

How is information of sources of audio-visual aids transmitted to teachers?—Selection here included one or more of the following: (1) information about audio-visual aids is by teacher's own efforts; (2) information is distributed by administrator, supervisor, or coordinator of audio-visual instruction; or (3) information is catalogued in central library.

With regard to information being given to the teachers, Lloyd Cartwright had the following included in his statements concerning county film libraries.
There are many helpful practices reported. Among the practices mentioned were: provision of an excellent film catalog; the reduction of red tape in ordering materials; the establishment of committees of teachers to select films to purchase; the use of student operators; a regular bulletin or newsletter to all teachers; monthly committee meetings; and holding workshops and demonstrations.¹

Any plan which tends to keep the teachers informed and to keep visual materials in use continuously for instructional purposes is acceptable.

What are the main sources of your audio-visual materials?—Four choices were given on this question: (1) purchased outright for use in local system; (2) purchased and made available through membership in county library program; (3) utilize industrial free materials; or (4) utilize commercial film libraries.

The purpose of this question was to determine if all available sources were being utilized and to what extent this was taking place.

Do you prepare a lesson plan for each audio-visual aid you use in your classroom, stating objectives, purpose, vital information to be learned, discussion periods, and evaluation of the above mentioned aid?—Choices were: (1) always, (2) sometimes, (3) only partially, or (4) never.

¹Lloyd J. Cartwright, "The County Film Library," Educational Screen, VI (June, 1951), 24.
Preparation is one of the most important phases of audio-visual instruction, because it is the attitude the teacher has with regard to this planning that influences the atmosphere of the learning situation. Hoban emphasizes the effective use of motion pictures by stating some of the teacher's obligations in using this medium.

To use motion pictures with educational effectiveness, the teachers must be clear as to the purposes for which they are used, the films must be selected in terms of the age levels and interests of the students, the films must be previewed so that their use may be integrated with other activities and directed toward specific and general objectives. This direction must be actually given, and in the meantime adequate provision must be made for projection and for the elimination of distracting interruptions.1

If you do not use audio-visual materials at all or as extensively and effectively as possible, indicate those barriers which you feel must be overcome if this utilization is to be realized. The question which was to be answered by all teachers returning the questionnaire and the one which was of most value to the survey was the final question.

Twelve suggestions were given in an attempt to get an indication of the barriers which were really causing the teacher to refrain from using these materials to his best ability. These included: (1) administrative opposition;  

(2) lack of adequate budget for this purpose; (3) lack of training in this area as a teaching procedure; (4) fear of running machines; (5) lack of confidence in this medium of instruction; (6) lack of equipment; (7) lack of knowledge of sources; (8) lack of students trained to set up and operate equipment; (9) lack of time to order, preview, and properly use these materials; (10) inaccessibility of materials or equipment; (11) lack of space or darkened room to show audio-visual aids; or (12) lack of valid audio-visual materials in teacher's teaching field.

The above barriers are those which the author felt are influencing factors in the minds of teachers who are not using these materials as extensively and effectively as possible. These barriers have been stated as having an effect upon utilization by numerous authors writing about audio-visual programs. Schwartz tells of the frustration caused by an inefficiently administered program.

Effective selection, utilization, and evaluation constitute the heart of the audio-visual program, but the processes of efficient administration and supervision are its life's blood. Too many teachers, challenged by the possibilities of audio-visual materials through stimulating conferences and summer courses, have returned to their schools only to be frustrated on every hand by narrowly conceived and administered programs.1

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Cartwright, in presenting the problem of implementing the effective utilization of audio-visual materials, states:

We have noted that this problem should be the concern of the principal and that a teacher might be selected to assist in this work. In many instances, the principal is the bottleneck. If he definitely opposes the use of the audio-visual materials few, if any, teachers will be enthusiastic users.  

The same author sets forth further barriers in writing about some of the most difficult problems found in organizing an audio-visual program.

The most frequently mentioned problem is the perennial one of adequate finances. Money is needed for an adequate program. One factor related to the solution of this problem is the matter of good public relations, i.e., making the people of the community aware of the values of the program; overcoming the idea that educational motion pictures are not frills but that films actually implement the educational program. The need for a sympathetic and informed administration lies in the same category. Another major problem involves proper utilization of films by the teachers. This difficulty was indicated for the most part in the in-service program.

These are only a few of the indications of barriers as stated by numerous writers in this area. Fox presents an extreme case which is too common in many of our public school systems.

Too frequently key administrators are not the leaders they should be in fostering these programs, but rather one often hears this sort of thing, a typical communication from a principal: "Please send

\[1\] Cartwright, op. cit., p. 20.

\[2\] Ibid.
someone to my faculty meeting to show them how to use. . . . I bought one five months ago and no one wants to use it.\textsuperscript{11}

### Method of Sampling

It was determined at the beginning of the survey that one hundred teachers in each group would be surveyed. Teachers who were to receive questionnaires were selected by random sampling. Using the \textit{Iowa Educational Directory} for the school year 1950-1951, it was discovered that: (1) there were 1,391 instructors in schools of less than one hundred who were teaching one of the sciences or social sciences; and (2) there were 502 persons teaching these subjects in schools with an enrollment of 101 to two hundred students. In the group of the smaller enrollment the last teacher in each group of fourteen was the one designated to receive the questionnaire and in the larger group the last teachers in each group of five were so designated. This was done to give a cross section of the teachers in these two areas in each class. There were no other specifications of selection.

The questionnaires were sent to the teachers the first part of May, 1951. One hundred twenty-eight had been

\textsuperscript{11}L. H. Fox, "Teaching Teachers to Use New Devices," \textit{Education}, LXX (December, 1949), 248.
returned from the two groups by the time the tabulation was made. The results were tabulated by means of a checklist on which were placed numbers corresponding to each teacher returning a completed questionnaire. Also included were the specific parts of each question. This enabled the author to determine at a glance the information desired for reporting the results.

The following table illustrates the teaching experience of those teachers who participated in the survey:

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>School 115 or Less</th>
<th>School 150-200</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>2 Years</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>3-5 Years</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>11-19 Years</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>20 or More Years</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

This information indicates that in schools with a lower student enrollment
CHAPTER IV

PRESENTATION OF DATA

One of the factors which was believed to be an obstacle to the utilization of projected audio-visual materials was teacher experience. The following table illustrates the teaching experience of those teachers who participated in the survey.

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>1 Year</td>
<td>18</td>
</tr>
<tr>
<td>2 Years</td>
<td>13</td>
</tr>
<tr>
<td>3-5 Years</td>
<td>10</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>5</td>
</tr>
<tr>
<td>11-19 Years</td>
<td>5</td>
</tr>
<tr>
<td>20 or More Years</td>
<td>9</td>
</tr>
</tbody>
</table>

This information seems significant in that it indicates that in schools of less than one hundred enrollment...
there are over one-half, 51.7 percent, of the teachers reporting who had only one or two years' experience. In the larger group there were 39.2 percent who had this same amount of experience. If experience is a factor in determining the utilization of projected audio-visual materials, it will be indicated in later tabulations.

The amount of training indicated by each of the teachers in both groups was as follows:

TABLE 2

TRAINING IN THE USE OF AUDIO-VISUAL MATERIALS AS REPORTED BY 128 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Semester Hours Training</th>
<th>Number of Teachers According to Years of Teaching Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 Yr.</td>
</tr>
<tr>
<td>100 or Less</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2 or Less</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 or More</td>
<td>1</td>
</tr>
<tr>
<td>101-200</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2 or Less</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3 or More</td>
<td>5</td>
</tr>
</tbody>
</table>

Forty-eight percent of the teachers with one and two years' teaching experience, and now teaching in schools with an enrollment of one hundred or less had college training in the use of audio-visual materials; of those teachers with over eleven years' experience, there were 43 percent who had training in the utilization of this medium of instruction.
This variation seems insignificant. However, in the larger group there were about 70 percent of those teachers with one and two years' experience and about 39 percent of those with over eleven years' experience who had training in usage of these materials. These latter figures tend to bear out the assumption made earlier that the more experienced teachers lacked training in using audio-visual materials. Further tabulations are necessary to determine if this lack of training is as influencing a factor as presupposed.

In determining the use of projected audio-visual materials without regard for training and experience, but based solely upon school enrollment there were ten, or 16.67 percent, of the sixty teachers reporting from the smaller schools who admittedly did not use these materials in their instruction. In the larger schools there were five, or 7.5 percent, of the sixty-eight teachers reporting who failed to utilize projected materials. These figures indicate only that there was more usage in the larger schools at the time of the survey.

The frequency with which audio-visual materials were used by each teacher was obtained by a separate item in the questionnaire. The response to this question indicated no significant difference for frequency of usage in relation to the size of school. The range of frequency was five to thirty-six times a semester for those responding to this
question. Very little uniformity of frequency of usage is indicated.

TABLE 3

MANNER IN WHICH AUDIO-VISUAL MATERIALS ARE USED BY 128 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951

<table>
<thead>
<tr>
<th>Use Made of Materials</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>As a vital teaching aid to the subject you are teaching............</td>
<td>35</td>
</tr>
<tr>
<td>As extra material not necessarily associated at the time with the subject you are teaching.............</td>
<td>21</td>
</tr>
<tr>
<td>For entertainment purposes only.</td>
<td>4</td>
</tr>
<tr>
<td>Shown to whole school whenever material is available..............</td>
<td>17</td>
</tr>
</tbody>
</table>

In responding to this item there were a few instances in which the teacher checked all four items. These responses indicated a lack of understanding in reading the questionnaire or in the purpose of using projected audio-visual materials. It was expected that this information would give some concept of the teacher's philosophy of employing audio-visual instruction. It seems that, if a teacher uses audio-visual aids as vital materials to the subject being taught, there can be no thought in his mind of using them in any of the other ways mentioned. Some teachers implied that, while materials were shown to the whole schools, it was an adminis-
trative policy and not one advocated by the classroom teachers. A specific situation which one teacher pointed out in his questionnaire as a reason for showing materials to the whole school or to more than one class at a time was because there were only twenty students in the high school. This may be a reason by which administrators justify this practice. However, if a teacher orders material for a specific situation, it should be used for that situation. If it has value for the remainder of the student body, it may be shown to them at a different time. The experience provided for pupils of one teacher should not be made less meaningful by the ineffective practice of presenting the material as a leisure time activity for the whole school.

The availability of sufficient equipment is a problem confronted by all those interested in audio-visual instruction. However, from the information received on the questionnaires, it seems this is probably not the outstanding barrier. This information is given in Table 4.

From the responses as itemized in Table 4, there are instances which are taken to indicate a lack of understanding of equipment. As compared with 108 16 mm. sound projectors, there were only twenty-eight teachers who indicated that they had silent projectors available. This seems to indicate that the teachers were not familiar with the equipment available to them because all 16 mm. sound
TABLE 4

PROJECTION EQUIPMENT AVAILABLE TO 128 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951

<table>
<thead>
<tr>
<th>Equipment Available</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>16 mm. Sound..................</td>
<td>48</td>
</tr>
<tr>
<td>16 mm. Silent.................</td>
<td>9</td>
</tr>
<tr>
<td>2 x 2 Slides..................</td>
<td>13</td>
</tr>
<tr>
<td>3 x 4 Slides..................</td>
<td>3</td>
</tr>
<tr>
<td>35 mm. Silent (filmstrip).....</td>
<td>21</td>
</tr>
<tr>
<td>35 mm. Sound (filmstrip).....</td>
<td>1</td>
</tr>
<tr>
<td>Opaque Projector...............</td>
<td>4</td>
</tr>
<tr>
<td>Other (specify)...............</td>
<td>0</td>
</tr>
</tbody>
</table>

Projectors are also silent projectors. The inventory indicated sixty-one 35 mm. filmstrip projectors, but only thirty-seven 2 x 2 slide projectors. It is possible to purchase a 35 mm. filmstrip projector which will not accommodate 2 x 2 slides. However, it is believed that those in charge of purchasing this equipment have likely purchased the most usable type of equipment, which in this case, would be the combination filmstrip and slide projector. These instances seem to give a possible barrier to utilization. These facts indicate that teachers are not aware of the possibilities of the equipment they do have.

Another evidence of this lack of understanding was implied when a teacher listed the only piece of equipment as a 35 mm. sound projector, then wrote "stripfilm" in the space provided for other available equipment. This may
have been an oversight, but again there seems to exist a lack of familiarity with the equipment.

**TABLE 5**

**MEANS BY WHICH 128 SCIENCE AND SOCIAL SCIENCE TEACHERS SECURE PROJECTED MATERIALS IN IOWA HIGH SCHOOLS IN 1951**

<table>
<thead>
<tr>
<th>Means of Securing Materials</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>Teacher secures own materials...</td>
<td>26</td>
</tr>
<tr>
<td>Coordinator obtains audio-visual materials for classroom teacher as he requests it......</td>
<td>22</td>
</tr>
<tr>
<td>Coordinator provides certain audio-visual materials to be used by teacher at a specified time.........................</td>
<td>10</td>
</tr>
</tbody>
</table>

Of the sixty-two teachers who stated they secured their own materials, twelve indicated that a coordinator was also solicited to procure audio-visual aids. The author contends that there is danger in employing these two methods in the same program. If the teachers are going to secure their own materials, they should do so and make arrangements to use the equipment when necessary. However, if there is a coordinator, he should secure all materials and issue the equipment as needed. Much turmoil can be avoided if the equipment and materials are centrally located and under the direction of one individual. Someone must keep the equipment...
in working order and issue the materials on schedule. This is difficult to do if everyone is trying to administer the program.

**TABLE 6**
MEANS BY WHICH 128 SCIENCE AND SOCIAL SCIENCE TEACHERS OBTAIN SOURCE INFORMATION IN IOWA HIGH SCHOOLS IN 1951

<table>
<thead>
<tr>
<th>Means of Obtaining Source Information</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>Information about audio-visual aids is secured by teacher's own efforts.</td>
<td>26</td>
</tr>
<tr>
<td>Information is distributed by administrator, supervisor, or coordinator</td>
<td>23</td>
</tr>
<tr>
<td>of audio-visual instruction</td>
<td></td>
</tr>
<tr>
<td>Information is catalogued in central library</td>
<td>9</td>
</tr>
</tbody>
</table>

The figures in Table 6 indicate responses given to this question in which multiple responses are possible. Of the sixty teachers reporting from the smaller schools there were only thirty-two situations in which they were being helped to secure information of sources. However, of those there were six instances in which the teachers were also included in the group who made some effort to obtain information for themselves. This means that only twenty-six, or 43.3 percent, of the teachers in these schools were receiving aid in finding sources of materials.
In the larger schools the teacher's position was much better. Of the sixty-eight teachers responding to the survey there were sixty-five cases in which aid was being given. Of these, five also reported securing information for themselves. This leaves sixty, or 92.3 percent, of the teachers who are receiving help in securing information about sources of materials.

**TABLE 7**

**SOURCES OF PROJECTED MATERIALS BEING UTILIZED BY 128 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951**

<table>
<thead>
<tr>
<th>Sources Being Utilized</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>Purchased outright for use in local system</td>
<td>11</td>
</tr>
<tr>
<td>Purchased and made available through membership in county library</td>
<td>7</td>
</tr>
<tr>
<td>Utilize industrial free materials</td>
<td>40</td>
</tr>
<tr>
<td>Utilize commercial film libraries (rental)</td>
<td>35</td>
</tr>
<tr>
<td>Utilize commercial film libraries (free)</td>
<td>28</td>
</tr>
</tbody>
</table>

There were six teachers who designated that the materials purchased for use in the local systems were filmstrips. Of the twenty-three indicating purchase for use as a member of a county library, there was only one who indicated
that the materials purchased were filmstrips.

University and college libraries were classified as commercial rental and commercial free. There were twenty-two cases in which specific libraries were mentioned as being sources of materials. Among these were: (1) Iowa State College, (2) University of Iowa, (3) South Dakota Teachers' College, (4) Western Iowa Film Association, (5) East Waterloo Classroom Films, and (6) Multiple County Library, Carroll, Iowa.

It can be seen from the preceding table that the source most frequently utilized is industry. It should be pointed out that many of the films secured from commercial libraries and from state colleges and universities are of this type. The following statement by Hoban and others should present some facts for educators to think about before using these materials merely because they are free or easy to obtain.

Many films are available for free use by schools from industrial concerns throughout the country. These are known as 'industrial' films and are intended to advertise a product in general, or a particular product of a particular organization.

A tempest has raged about the question of school use of these films. Some educators refuse to permit their use in any classroom. Others, desperate for films and frustrated by a budgetary poverty, have made wide use of them.

The uncritical use of 'industrial' films in schools involves a fundamental question of authority in the selection of instructional material—whether the schools should rely on competitive concerns striving for profit which use so-called instruction films to advertise their
wares subtly or openly in the schools, or whether the schools themselves should select the content of their instructional material and avoid influence from particular commercial concerns. This question is unfortunately more or less academic. For many years pressure groups have to some extent been dictating the content of the curriculum. In the final analysis, the question must be decided for each particular film on the basis of the inclusion of worthwhile educational material and the exclusion of unfair or obnoxious advertising.

Many industrial organizations maintain bureaus for the distribution of their films to schools. Others produce films for the exclusive use of their own personnel in training in salesmanship, sales campaigns, etc. . . . Whether films produced by industrial concerns . . . should be used for instruction depends on many factors other than their production by a particular concern.

### TABLE 8

**PREPARATION OF LESSON PLAN FOR EACH AUDIO-VISUAL AID USED BY 123 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951***

<table>
<thead>
<tr>
<th>Preparation Made</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools 100 or Less</td>
</tr>
<tr>
<td>Always</td>
<td>10</td>
</tr>
<tr>
<td>Sometimes</td>
<td>20</td>
</tr>
<tr>
<td>Only partially</td>
<td>12</td>
</tr>
<tr>
<td>Never</td>
<td>5</td>
</tr>
</tbody>
</table>

*Question: Do you prepare a lesson plan for each audio-visual aid you use in your classroom stating objectives, purposes, vital information to be learned, discussion periods, and evaluation of the above mentioned aid?*

Of concern here are the thirty-seven teachers who only partially prepare a lesson plan, or never prepare.

---

plans for use with audio-visual materials. In addition to
the thirty-seven shown in the above table, there are also
the fifteen previously mentioned who are non-users. This
means that of the 128 reporting in the survey, there were
about 40.8 percent who were either non-users or were im-
properly using these materials. Fern and Robbins recognize
the teacher who makes no preparation before using films.

Teaching films are their own worst enemies. Next
to textbooks, they have been misused and abused more
than any other kind of instructional aid. The labor-
saving teacher has welcomed films with open arms as a
marvelous and wonderful device for entertaining stu-
dents without requiring any lesson preparation on his
part, and the status of teaching films as instruction-
al aids has suffered thereby. ¹

Speculation runs high as to the real barriers to
effective utilization of this medium of instruction. Fern
and Robbins expose two of these barriers.

Any school system can find many good teachers who
use audio-visual materials effectively and many others
who use them ineptly or not at all. The Achilles' heell of audio-visual then becomes the teacher who is
by inertia or lack of training a non-user. Having
been convinced that only those who have visited the
magic shrine and received the magic password may
safely attempt the audio-visual ritual, she plays
safe and continues in her traditional bookish groove.
She has as a contemporary the teacher who, trained in
formalized audio-visual courses, can never find time
to 'preview, make a class preparation, screen and
follow up.' Such a teacher is just as effectively
a non-user.²

¹George H. Fern and Eldon Robbins, Teaching With
Films, p. 82. Milwaukee: The Bruce Publishing Company,
1946.

²Ibid., p. vi.
Thus far the tabulation presented has contained possible indirect barriers. An attempt has been made to
determine, without direct questions, the probable under-
lying causes for this lack of usage. Before attempting to
analyze and then synthesize the information presented as
indirect elements, the tabulation of direct questions will
be presented. It is evident from these facts that there
are some definite reasons for teachers failing in effective
and extensive use of audio-visual materials.

As previously stated, the final question on the
questionnaire was considered to be the most important and
instructions were given for everyone who returned a ques-
tionnaire to indicate those things which he recognized as
being barriers to the extensiveness and effectiveness of
his utilization of this material. The tabulation of the
answers to this question is found in Table 9, pages 57
and 58.

It is evident from this table that teachers in
both groups are in agreement concerning their reasons for
not using projected audio-visual materials more extensiv-
ely and effectively. Those which rank highest are: (1)
lack of adequate budget; (2) lack of time to order, pre-
view, and properly use; (3) lack of space or darkened room

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1See page 39.
**TABLE 9**

**BARRIERS WHICH PREVENT EFFECTIVE AND EXTENSIVE USE OF PROJECTED AUDIO-VISUAL MATERIALS BY 128 SCIENCE AND SOCIAL SCIENCE TEACHERS IN IOWA HIGH SCHOOLS IN 1951**

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Schools 100 or Less</th>
<th>Schools 101-200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Number&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Lack of adequate budget</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Lack of time to order, preview, and properly use</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Lack of space or darkened room to show audio-visual aids</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Lack of training in use of audio-visual materials</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Lack of equipment</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Lack of knowledge of sources</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Lack of student operators</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Inaccessibility of materials or equipment</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Lack of valid audio-visual materials in my teaching field</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

<sup>a</sup>Rank of importance according to the frequency of teachers in this group giving this reason as a barrier.

<sup>b</sup>Number of teachers in this group recognizing this as a barrier.

<sup>c</sup>Percentage of teachers in this group who recognized this as a barrier.
<table>
<thead>
<tr>
<th>Barriers</th>
<th>Schools 100 or Less</th>
<th>Schools 101-200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ranka</td>
<td>Numberb</td>
</tr>
<tr>
<td>Administrative opposition</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Lack of confidence in this medium of instruction</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Fear of running machines</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Other: public relations</td>
<td>11</td>
<td>1</td>
</tr>
</tbody>
</table>
to show audio-visual aids, and (4) lack of training in use of audio-visual materials.

Of importance in connection with Table 9 are the following facts. There were fourteen teachers, or 23.3 percent, of those in the smaller group who failed to answer this question regarding the barriers which they felt caused lack of extensive and effective use of this medium of instruction. In the group reporting from the larger schools there were seventeen out of sixty-eight, or 25 percent, who failed to answer this question. Reasons for this may have been because of the detail of the question or because of a fear that the information may reflect upon the teacher or the administration in some way.

When including the entire sampling from both groups, 39.4 percent of the teachers with two years or less teaching experience had some audio-visual training. Whereas, teachers from the larger schools with the same tenure of teaching experience indicated 69.6 percent as having audio-visual training.

Comparing the less experienced teachers with those of both groups having eleven or more years teaching experience, 47.9 percent indicated some audio-visual training. These figures indicate that new teachers in the profession...
CHAPTER V

SUMMATION OF INFORMATION

The answers to the questionnaire have been tabulated in the previous chapter. These include only direct answers to the questions. The implications will be set forth at this time.

It was assumed that teachers who had entered the profession most recently would be most likely to have training in the use of audio-visual materials. This assumption is only partially correct. Approximately 52 percent of the teachers in the schools with an enrollment of one hundred or less having two years or less teaching experience had some audio-visual training. Whereas, teachers from the larger schools with the same tenure of teaching experience indicated 69.6 percent as having audio-visual training.

When including the entire sampling from both groups, 59.6 percent of the teachers with two years or less teaching experience had some audio-visual training.

Comparing the less experienced teachers with those of both groups having eleven or more years teaching experience, 43.3 percent indicated some audio-visual training.

These figures indicate that new teachers in the profession
do have more training in the use of this instructional aid. It also indicates that the larger schools in this survey possess teachers with a competency in audio-visual instruction.

This audio-visual training has little bearing, however, unless usage is the outcome of the training. Of the fifteen non-users there were four who had either some college or in-service training.

Of the teachers having training in using audio-visual materials, there were fifty-four, or 83 percent, who indicated they used these materials as a vital teaching aid to the subject being taught. However, of these there were sixteen who also specified that they used these materials as extra aids not necessarily associated with the subject being taught. This seems to be a conflict of the manner of usage. If these sixteen are considered as borderline practices, there would be thirty-eight who indicated using projected materials as a vital aid in accordance with their philosophy of education.

Of those who indicated training in the use of audio-visual instruction there were only nine of the total 128 teachers surveyed who recognized these materials as vital teaching aids and always prepared a lesson plan for usage. Of these nine, there were four who did not consider time as an element in their lack of utilization. This is
significant in that it seems to indicate a very small percentage of these individuals are convinced of the importance of this medium of instruction, even though there were only six of the 128 who admitted lack of confidence in this medium on their questionnaire.

Of those who indicated no training in the effective use of these materials, there were thirty-three, or 62.3 percent, who specified their usage as a vital aid. There were eight of these who also indicated the materials were used as extra material. This leaves twenty-five who were not involved in the previously mentioned conflict of philosophies. Only five of these twenty-five indicated they always prepared a lesson plan, and only two of those five did not indicate time as a barrier to their usage. Therefore, there was a combined total of seven, or about 5.5 percent, of those reporting, trained and untrained, who recognized these materials as vital teaching aids, always prepared a lesson plan for usage, and did not regard time as an element in their lack of utilization.

In determining whether trained or untrained teachers were better utilizing the material, it should be recognized that there were fifty-three teachers with no training and sixty-five with training who were using audio-visual materials. Determining the respective percentages shows that
about 3.8 percent of the teachers who had no training were properly using these materials and 7.7 percent of those having training were properly using the materials. From this observation it seems the difference can hardly be considered significant.

It should be recognized that the factors involved in the above observation are all individual. They are factors which the teacher himself should be able to rectify without the administrator's help.

Securing materials is an area in which the classroom teacher may find difficulty. Of the 128 teachers reporting there were only sixty-six who indicated some type of aid from an audio-visual coordinator. If, as observed previously, the teachers do not overcome those obstacles which are most immediate, how can they be expected to overcome those such as securing their own materials?

It seems there can be very little progress if a coordinator is not provided. The functional school will provide a coordinator and alleviate some of the teacher's obstacles. This is an administrative problem.

The barrier preventing the use of audio-visual aids which ranked first and second respectively in the smaller and larger school was lack of an adequate budget. Yet administrative opposition ranked ninth and eighth respectively in the two groups. Some of the barriers which ranked
between these two were: (1) lack of equipment, (2) lack of knowledge of sources, (3) lack of student operators, (4) inaccessibility of materials, and (5) lack of space or darkened room to show visual aids.

The majority of these barriers are considered by the author to be administrative in nature. The administrator is in the best position to: (1) propose purchase of equipment; (2) distribute information of sources; (3) select coordinator who can train student operators; (4) make materials and equipment accessible; and (5) provide room and shades to use for this purpose. The conclusion here is that the teachers reporting indicated those barriers which implied administrative opposition.

A barrier which was indicated by twelve teachers to be a cause for their not using projected educational materials effectively was that of lack of audio-visual materials in the particular teaching fields included in the survey. This barrier was selected by the author in an attempt to determine if the teachers had made an attempt to secure these materials or if they were partly rationalizing their failure for not utilizing this medium.

This barrier, namely lack of material, is a fallacy as pointed out by Brown and VanderMeer.  

The use of audio-visual instructional materials and methods is not limited to any area of the curriculum, although there appear to be differences in the quantities of such materials available for the various curriculum areas. Ten large film libraries in the United States, for example, report the following median percentages of stocked 16 mm. sound and silent motion pictures for the subject-matter areas indicated, rated according to their 'primary usefulness':

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Percent of Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Studies</td>
<td>30.0</td>
</tr>
<tr>
<td>Science</td>
<td>25.0</td>
</tr>
<tr>
<td>Industrial Arts and Vocational Education</td>
<td>15.0</td>
</tr>
<tr>
<td>Health and Physical Education</td>
<td>10.0</td>
</tr>
<tr>
<td>Guidance</td>
<td>4.0</td>
</tr>
<tr>
<td>Language</td>
<td>3.5</td>
</tr>
<tr>
<td>Art</td>
<td>3.0</td>
</tr>
<tr>
<td>Music</td>
<td>2.0</td>
</tr>
<tr>
<td>Mathematics</td>
<td>1.0</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Further evidence of this fallacy is found in the results of a questionnaire employed by the National Education Association on which respondents were asked to indicate areas in which teachers were making most effective use of teaching films.

Of 816 replies for elementary schools 730 mentioned 'social studies' and 487 mentioned 'science.' The next most frequently mentioned area, 'health' was checked 139 times, and 'mathematics' only 3 times. At the junior-senior high level science and social studies headed the list. 'Science' was checked 803 times, and 'social studies' 714.1

An overview of the results of this study as tabulated in Chapter IV leads to certain conclusions and recommendations.

1Ibid.
On the basis of information gathered the author has made the following conclusions.

**Conclusions**

1. That teachers are not using projected audio-visual materials as extensively and effectively as possible.

2. That while few teachers admitted lack of confidence in this medium of instruction directly, the majority failed to use it properly.

3. That teachers realize that they are not using projected audio-visual materials as extensively and effectively as they should, but they do not know the real reasons why.

4. That many of the recognized barriers to effective utilization of these materials are individual in nature and can be eliminated by the individual teacher.

5. That administrators are failing to give the necessary support to audio-visual aids by seeing that more adequate budgets are provided.

The following recommendations are offered by the author for improving instruction in our schools through utilization of audio-visual materials.

**Recommendations**

1. That educational institutions training administrators emphasize the importance of this medium of instruction.

2. That educational institutions training teachers give extensive laboratory work in using audio-visual materials.

3. That teachers take steps to improve in their methods of instruction by utilizing the latest proven materials.
4. That teachers who do not have time to properly prepare for their classes seek some other means of livelihood.

5. That all school systems have an audio-visual program under the direction of one audio-visual coordinator who can also provide in-service training.

6. That teacher training institutions require a course in audio-visual materials before graduation.

7. That small schools combine their funds to provide a central library of audio-visual aids from which materials may be borrowed.

8. That some means be secured for having an audio-visual budget in all schools to be used for that purpose only.

9. That educational institutions set the example by utilizing audio-visual materials properly in their classes.


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