

AUDIO-VISUAL AIDS
IN
PUBLIC SCHOOLS

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AUDIO-VISUAL AIDS IN PUBLIC SCHOOLS

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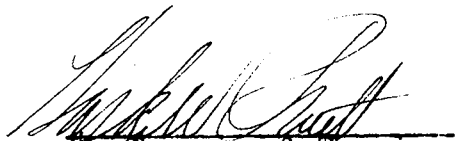
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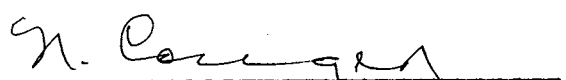
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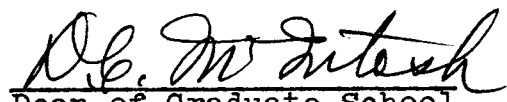
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G. O. B.

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CHAPTER I

INTRODUCTION

Purpose of the Study

The purpose of this study is to define a program of audio-visual aids in public schools and measure enjoyment as a factor in photoplay appreciation in education.

The Meaning of "Visual Instruction"

In the early stages of the development of the use of visual aids, it was thought that the eye was all-powerful in the educative process. Some were enthusiastic enough to state that eighty percent of all we know is learned through the eye. Others surmised that it would not be long until texts would be replaced by pictorial substitutes for the printed word.

The more sane analysis of the true factors affecting learning has developed a term--"visual-sensory aids"--which seems to be in favor among the leaders in this field. The term is applied to all materials used in the classroom, or in other teaching situations, to facilitate the understanding of the written or spoken word. Visual will be interlinked with the other senses in such a way that it would be very difficult to separate one from the other or to determine the exact contribution of each, separately. In fact, there are few psychologists who would attempt so to control all other factors that the true learning power of each of the senses might be segregated and measured. Perhaps, after all, there is no good reason for becoming unduly concerned over the

matter.

It may be sufficient to state that the eye is considered to be primary in importance, thus giving us that right to place it ahead of the other senses. In this situation our term, "visual-sensory aids", becomes a more nearly true statement of the situation than would "visual education" or "visual instruction." The development of sound pictures, sound film-slides, radio, sound recording, reproduction and distribution equipment, the majority of which are being used extensively among schools, is bringing into use a comparatively new term, "audio-visual." It is used to encompass almost the entire field of illustrative materials; visual aids, sound aids, and the various combinations of the two.

The discussions which follow will consider the different types of visual aids, with some suggestions concerning the use of such aids. Following, in turn, there will be discussions of sound aids and of audio-visual aids to instruction. The next several pages will be concerned almost entirely with visual aids.

The Different Types of Visual Aids

"The use of the picture as an aid in education is not new in any sense of the word. For many thousands of years, it has been exceedingly important in conveying correct impressions from one to another. Perhaps it was the first substitute for pantomime, or the re-enacting of the event, which became more and more difficult with the increase in the complexity of the social structure and of knowledge. Perhaps its first use was as a warning, carved on the bank of a tree or scratched on the surface of a stone, to tell others of dangers in that vicinity. Regardless of its earliest use, we are reasonably certain that a picture language was the forerunner of our modern

alphabet,"¹

As the printed letter or word has become further removed from its ancestry, the picture, it has become more and more abstract; more and more difficult for the human mind to understand fully. A technical discussion, presented in the usual language might become clear and understandable, particularly if a few pertinent illustrative materials were used. We recognize symbols and think only in terms of past experience. Accordingly, it is imperative that we include in our educational procedure the maximum number of those things or representations of things which aid in clarifying thought--in making objective the abstract.

One factor which has served to retard the normal development of the use of visual-sensory aids to instruction has been the narrow interpretation of some of the most active workers. Some think of visual instruction as being the uses (1) of motion pictures for instructional purposes, (2) of the glass slides or film strips; and (3) of the excursion or of museum materials. There are those who argue that the talking or sound picture is the acme of perfection in visual instruction. Some have the feeling that the glass slides offers more educational advantages than any other type of projected picture. Some will not give the film strip slide fair consideration, because of its size, while others find it to be extremely

1. Dent, Ellsworth, the Audio-Visual Handbook, published by the Society for Visual Education, Chicago, Illinois, p. 2

valuable in many situations.

These extreme claims for one type and criticisms of other forms of visual aids have done much to place the novice in a quandary, wondering if there is any true value in any of the materials mentioned. This is an unfortunate situation, and might be eliminated by giving each type fair and careful consideration.

The school journey is one of the most effective of all teaching tools, if applied properly. Similarly, the photograph, the stereograph, the glass slide, the sound film slide, the silent motion picture and the motion picture will produce extremely satisfactory results if applied when, where and as they should be. Each has its place for each in nearly every teaching situation. In certain situations, each will be found to be better than any other. Combinations of types are desirable frequently.

Another factor which has tended to retard the more extensive use of visual-sensory aids to instruction has been the over-statement of facts relative to certain findings.

"If one is in the market for an automobile and an enthusiastic salesman represents his type of car as being twice as speedy; capable of giving twice as much mileage on a gallon of gasoline; twice the mileage on tires; and twice the mileage without repairs or adjustments, as compared with other cars of similar type and price, it is quite probable his veracity would be questioned. The same feeling has developed relative to certain statements issued by those who have become super-enthusiastic about the instructional possibilities of visual-sensory aids."²

2. Ibid., p. 3

SUMMARY

In the early stages of the development of the use of visual aids the eye was all-powerful in the educative process. The more sane analysis of the true factors affecting learning has developed another term:--"visual-sensory aids." The development of the sound pictures has brought a comparatively new term, "Audio-Visual." A technical discussion, presented in the usual language might become clear and understandable particularly if a few pertinent illustrative materials were used.

CHAPTER II

The Use Of Visual Aids Among Schools

"The recent survey of 8,806 schools and school systems, conducted by the office of education and the American Council on Education, contains some interesting information concerning the use of visual and other aids among schools. It is rather evident from the reports of manufacturers that survey does not cover all the schools or school systems which have visual instruction equipment and are using visual aids. On the other hand, it is valuable to note that the 8,806 schools and school systems reporting have 37,671 instruments for the projection of pictures. These include all types, from the inexpensive film-slide projectors to the most complete equipment for the presentation of sound motion pictures. In addition, it was reported that these same schools owned 11,501 radio receiving sets, nearly a thousand centralized sound systems, approximately three-quarters of a million phonograph records, and more than three million glass slides."¹

These figures, in order to be meaningful, require more complete analysis of the survey than it is possible to present here. Any survey is limited by the cooperation and accuracy of those who provide the information. Accordingly, the most important information derived from the survey is that which related to the use of these various aids among schools which did report. As an example, the accompanying graph summarized the extent to which all types of audio-visual aids are used among a certain group of the schools which reported. It will be noted that this summary includes only schools with enrollments of 750 to 2499, and that reports from approximately 2,000 such schools were received.

1. Koon, Cline M., and Noble, Allan W., "National Visual Education Directory", 1936. Published by American Council of Education, Washington, D. C.

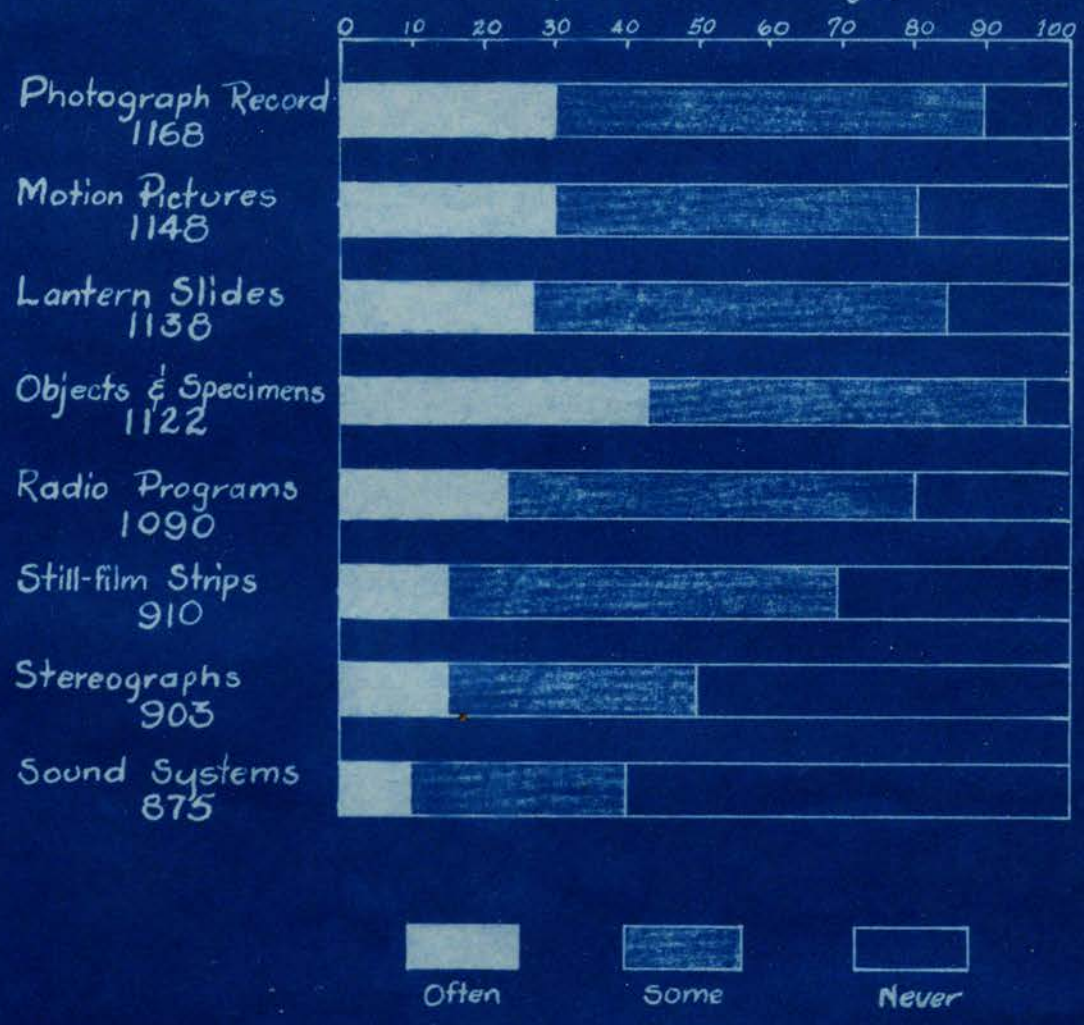
The most significant information one might gain from graph number one found on page eight² is a rather clear impression of the extent to which the different types of audio-visual aids are actually used in the school. The amount of white space on each bar is very small, except from the bars indicating reported use of stereotypes and filmstrips. These two aids habitually more used among elementary schools than a similar summary of use among the elementary grades would probably present a different picture. As might be expected, the non-Mechanical aids are used more extensively than those which require machines for projection or reproduction. It is interesting to note, further, that phonograph records are used more regularly than any of the other mechanical aids among schools reporting.

A close study of the survey and related information makes it rather safe to conclude that the majority of the schools, in the United States are making regular use of some type or types of audio-visual aids to instruction. On the other hand, many are employing a truly balanced program, applying school journeys, photographs, slides, filmstrips, motion picture, and other visual, audio-visual and sound aids when and as they are needed.

2. Dent, Ellsworth C., The Audio-Visual Handbook; published by the Society For Visual Education, Chicago, Illinois, p. 120

Extent of Use of Audio-Visual Aids In Schools of 750-2499³ Enrollment

Expressed in Percentages



Education Survey 1936
Figure Number 1

3. Ibid. p. 11

The extent to which these valuable aids are used and the degree of effectiveness with which they will be employed will depend almost entirely upon the amount and quality of the training the teacher has received. The greatest factor retarding the more extensive and more intelligent use of visual-sensory aids in the inadequate training of teachers to make use of the materials available.

Very little attention has been given to 35-mm. silent motion picture among schools because of their increased cost over the 16-mm. film. The 16-mm. motion picture film and equipment have replaced the 35-mm. silent films in the majority of the schools, and there are few situations in which 35-mm. silent subjects are being produced. Those who may be interested in using 35-mm. motion picture service for any special purpose will be able to secure used films and equipment at very reasonable rates, but will find that the transportation charges on 35-mm. films are extremely high in comparison with the cost of shipping 16-mm. subjects. Furthermore, the quantity of good 35-mm. educational subjects is so limited that the average school will not be able to get what it wants on that size and type of film.

So far as is known, the first phonograph record was used in the school for instructional purposes in 1909, in the public schools of Milwaukee, Wisconsin.⁴

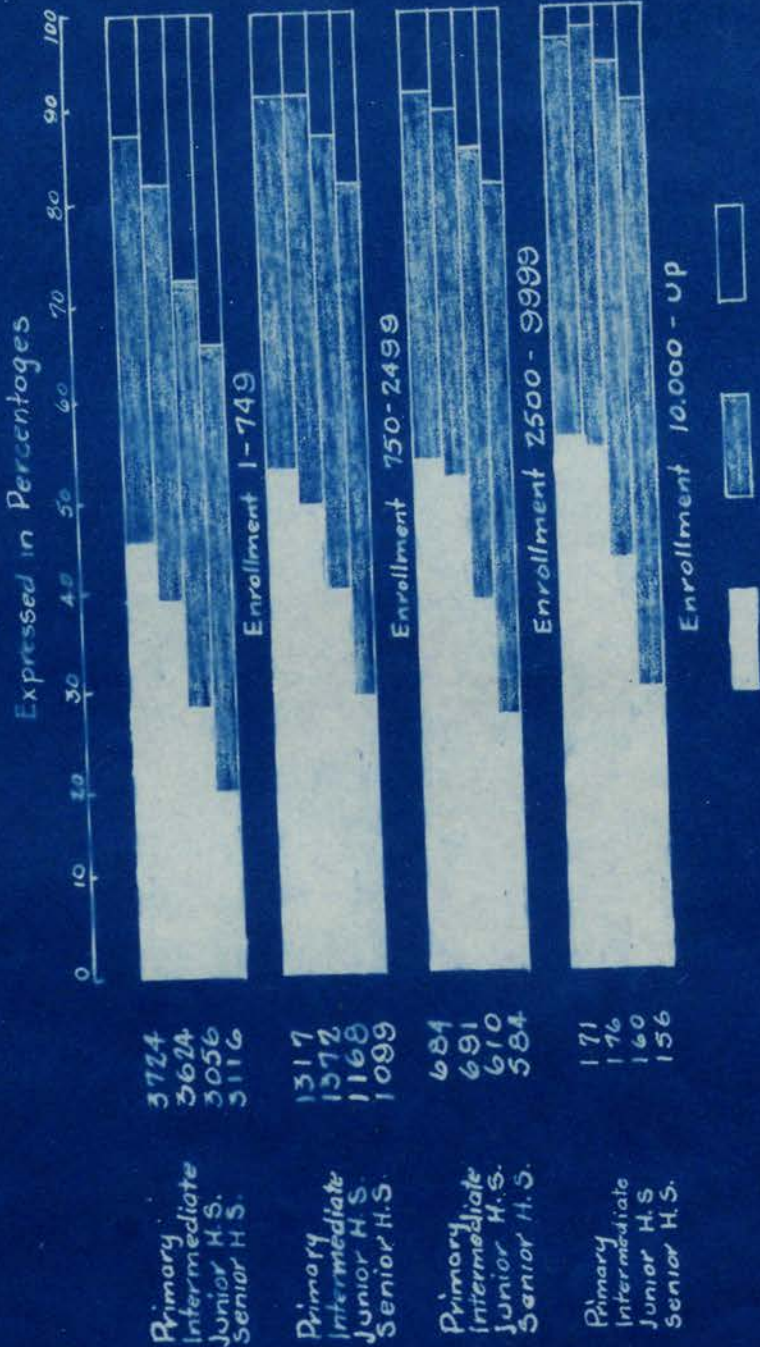
4. Ibid., p. 120

It is a matter of record that the first important move toward utalization of the phonograph record among schools on a national scale was on April 1, 1911. At that time, the Victor Talking Machine Company took to Camden, New Jersey, an enterprising music supervisor from the Milwaukee City Schools. This enthusiastic young woman, Frances Elliott Clark, the first teacher to use phonograph records for instruction in music, believed that a major function of recorded music was to teach music and music appreciation. She believed it should be taken into the schools throughout the land, so children might learn to know and appreciate good music by hearing the finest compositions, reproduced from recordings of the world's greatest artista and musical groups. This relief has been substantiated by a steady increase in the use of recordings in schools. It has been attested further by the fact that phonograph records are used more extensively by schools today than any of the other types of visual, sound or audio-visual aids to instruction.

The graph on page eight⁵ shows the extent to which all types of audio-visual aids used among high schools. The graph which appears on page 12 shows the extent to which phonographs ~~records~~ are used among all types of schools, from the primary through the secondary, and among schools of all sizes.

5. Ibid., p. 8.

Extent To Which Phonograph Records Are Used In Primary And Secondary Schools

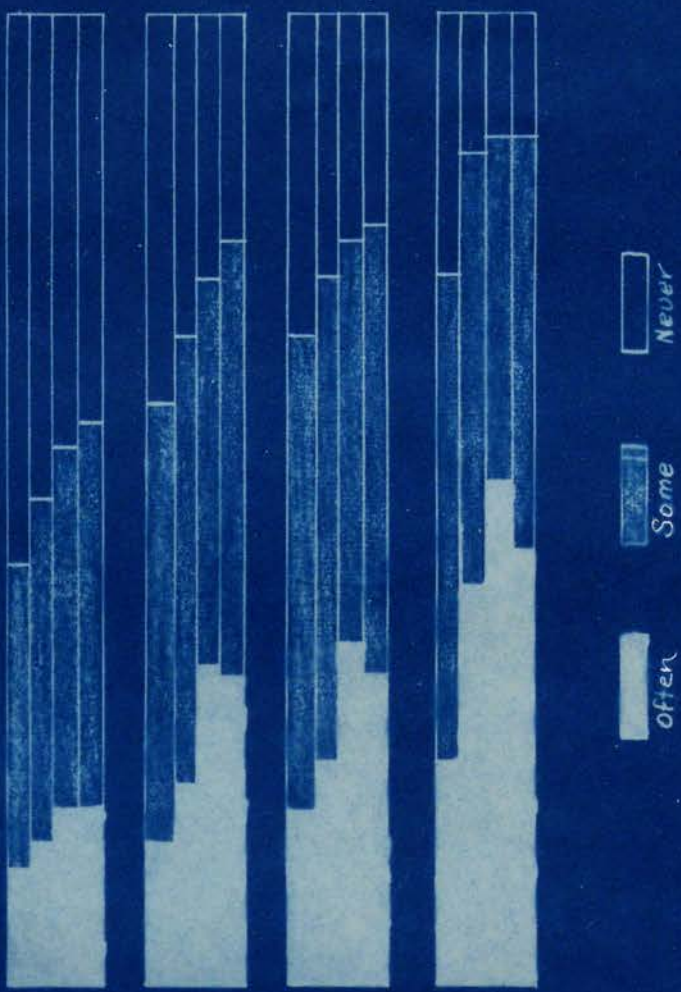


Education Survey - 1936

Figure Number 2

Extent To Which Motion Pictures Are Used In Primary And Secondary Schools²

Expressed in Percentages

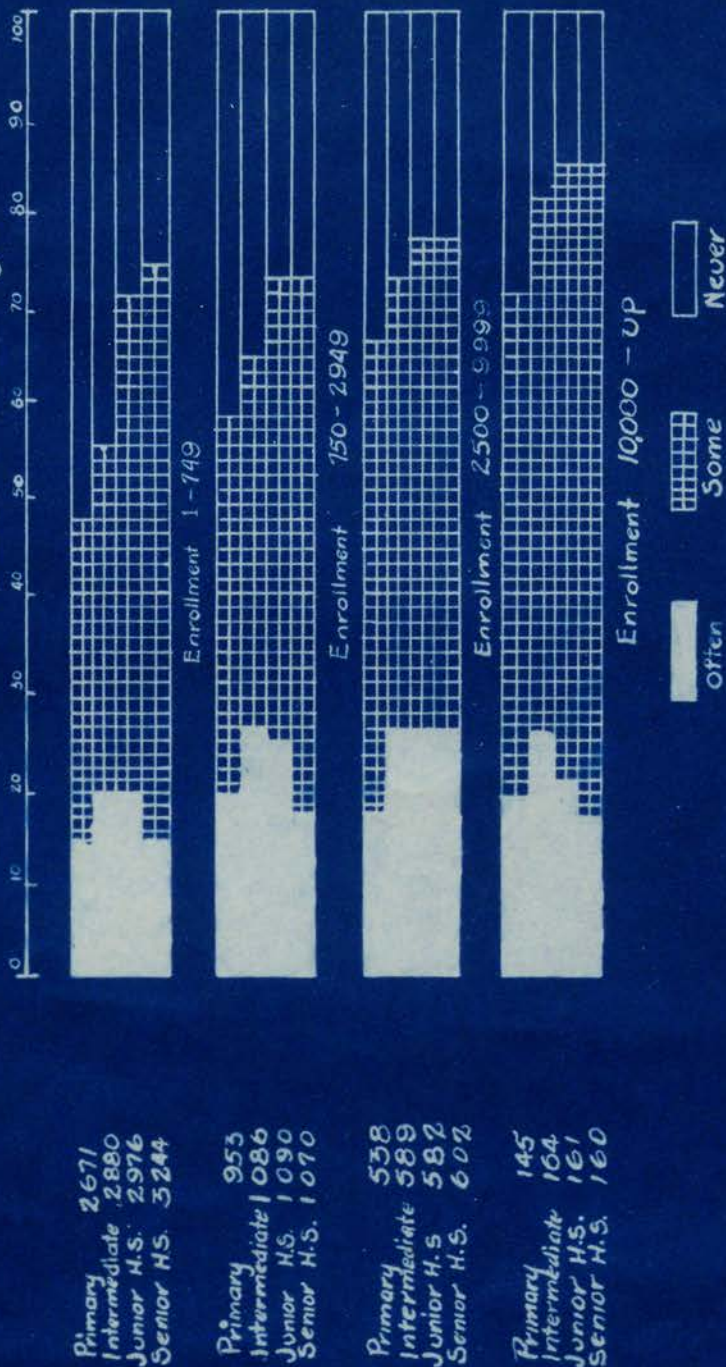


Education Survey 1936

Figure Number 3

7. Ibid. p. 121.

Extent To Which Radio Programs Are Used In Primary And Secondary Schools⁸ Expressed in Percentages



Education Survey 1936
Figure Number 4

8. Ibid. P. 123.

A more recent development in phonograph records promises to make available for class use many of the best educational radio programs. It is difficult in many instances for schools to adjust their schedules to utilize certain instructional radio programs will make it possible for the teacher to use material best suited for the purpose.

It is probable the use of radio in schools for instructional purposes in receiving more attention among schools and educational service agencies than any of the more recent sound aids to learning.

"The National Broadcasting Company, Columbia Broadcasting Company, Office of Education and many smaller organizations are giving careful consideration to ways and means of utilizing radio to the greatest educational advantage."⁹

The problems are many. Some may require years to solve. The interesting phase of the situation is that broadcasting facilities, Government agencies, and schools are working together, experimenting, planning and replanning, all for the ultimate benefit of Johnie and Mary to receive formal instruction from the radio.

One of the major problems is that of determining just which type of program is most effective in education. Education in the past remained rather harsh and sometimes distasteful, for "disciplinary" purposes. It is now very easy to ~~turn~~ the dial if the program has not sufficient

9. Ibid., p. 10

has not sufficient appeal to the listener. Accordingly, it has been necessary to change the method of presentation-- to catch and to hold the interest of the listener. Some programs have been too dull and others too entertaining to accomplish the desired result. The successful educational radio program of today is one which sets out to accomplish definite objectives and does so by following certain procedures. The bulletin, Education by Radio, presents a summary of "Guideposts for Producing Educational Program",¹⁰ which should provide a clear impression of some of the problems of educational broadcasting.

The production of radio programs for broadcast and mock radio programs for use within the school or other group is becoming one of the most effective methods of applying radio technique to instruction in music, speech, dramatics, history, geography, science, and many other subjects. A Script exchange offered by the Office of Education provides a wealth of effective instructional material used in schools, C. C. C. camps, and other educational groups. Many broadcasting stations offer their facilities to schools at little or no cost for the presentation of such programs at their disposal. Past and current activities of both private and governmental broadcasting facilities establishes the fact that those agencies will provide to the best instruction. This further attested

10. Education by Radio, Vol. 7, No. 4, April 1937; National Committee on Education by Radio, One Madison Avenue, New York City.

by the widespread activities of city, state and university broadcasting stations which are offering excellent of their ability the educational programs which will be most effective in educational programs to the schools in the areas which they serve.

SUMMARY

It is valuable to note that 8,806 schools and school systems reporting have 37,671 instruments for the projection of pictures. The same schools owned 11,501 radio receiving sets, nearly a thousand centralized sound systems, approximately three-quarters of a million phonograph records, and more than three million glass slides.

Very little attention has been given to 35-mm. silent motion pictures among schools because of their increased cost over the 16-mm. film. The first phonograph record was used in the school for instructional purposes in 1909, in the public schools of Milwaukee, Wisconsin. The interesting phase of the situation is that broadcasting facilities, Government agencies and schools are working together, experimenting, planning and replanning, all for the ultimate benefit to receive formal instruction for the radio. Many broadcasting stations offer their facilities to schools at little or no cost for the presentation of an education program.

CHAPTER III

TYPES OF AUDIO-VISUAL AIDS

The Sound Film Slides

The sound film slide is composed of two major parts. One is the series of still pictures printed on 35-mm. motion picture positive for projection by use of a film slide projector. Such a strip of film may include any desired number of "frames" or individual pictures. The other part is the recorded sound which illustrates or explains the picture series. This combination of sound and picture is projected and reproduced by means of a simple instrument, one section of which projects the picture to a screen before a group and the other reproduces and amplifies the sound so it may be heard clearly by all members of that group.

The sound slide, known in the industrial field as the sound strip film or filmstrip, has been developed by industry for sales and educational purposes. A central agency may prepare and record a discussion of new models, new sales plans, the story of product, or any one of hundreds or thousands of branch offices or salesmen for use simultaneously. It is really a convenient means of communication when a long or short story must be told effectively. The sound film slide is used by all types of industries largely within the organization, but is used in many instances to tell the story of products to the public. Several of the government agencies are using the sound film slide to disseminate information concerning the functions and achievements of those agencies. In other cases they are using sound film slides

for instructional purposes.

The sound film slide is not used among schools to any great extent. It is doubtful that this situation will exist for long, inasmuch as various organizations are giving consideration to the sound film slides for use in the classrooms. Certainly the recorded lectures of acknowledged specialists, illustrated by appropriate still pictures, will be of greater value in the classroom than the reading of articles prepared by the same or other specialists on similar topics.

Frequently, the story which is to be told is one with the teacher is not thoroughly informed. A good sound film slide illustrating and telling the story of cotton, for example, will give the pupil in fifteen minutes a much better impression of cotton and the ramifications of the industry than the same student could hope to obtain through the reading of many pages or by listening to lengthy discussions by someone who is not thoroughly familiar with the subject.

The situation which affects the use of sound film slides among educational purposes a few years ago.

"Producers of sound film slides state that it will not be profitable to produce subjects for use among schools until schools have equipment on which to use those subjects. Schools do not expect to purchase equipment on which to use those subjects is reasonable as required after equipment is secured."¹

1. Op. cit., p. 14.

It is probable this deadlock will be broken as in the case of the motion picture by some enterprising commercial organization which recognizes the potential market among schools for this type of material. Also, as in the case of the motion picture, it will be necessary for the producer or producers to work closely with the school for the purpose of determining the exact school requirements.

At the outset, the chief advantage of the sound film slide will be the very low cost at which it can be produced and distributed. When sound film slide subjects are available for educational use, it is probable the filmstrip and accompanying record or transcription may be purchased as a unit at a cost of a few dollars. The projection and reproducing equipments are now available on the market at prices with range from \$50 to \$100, or more. The cost will be considerably less than the cost of sound motion pictures and projection equipment and in many instances it is probable the projected series of still pictures will be as effective as would be the same material in motion picture form.

The Sound Motion Picture

The battle rages on! Embattled on one side, we find those who claim that sound detracts from the instructional value of the motion picture instead of increasing its teaching value. Entrenched on the other, we find those who claim that recent developments in educational sound film have relegated the silent film to obsolescence. But there are forming larger forces than those of either of the belligerent factions who believe that both the silent and the sound film have certain

definite valuable functions to perform--that each has its place and there is a place for each. The author chooses to cast his lot with this larger group, not for safety, but because of an honest conviction that neither the sound nor the silent films, alone, can accommodate the requirements of schools as adequately as both.

The survey² of visual aids instruction equipment conducted by the Office of Education in 1936 indicated that the relation of silent to sound projectors in use among schools is approximately 12 to 1. It is probable this ratio has changed within the year, as many schools have purchased sound projectors. The majority of the sound projectors purchased by schools are of the 16-mm. type, although many schools are installing 35-mm. sound equipment, or both, in order that the best of standard theatrical productions may be used for both educational and recreational purposes. Practically all 16-mm. sound projectors are designed to accommodate either sound or silent films and this versatile equipment seems to be the wisest investment for the school which desires to make the most effective use of educational motion pictures.

One of the greatest factors which has retarded the more widespread use of sound motion picture equipment among schools has been the lack of a sufficient quantity and variety of good educational sound film. This situation is being corrected

2. National Visual Education Directory:--American Council on Education, Washington, D. C., 1936.

rather rapidly and it should not be long until the supply will be sufficient to meet the requirements of the average school. One of the interesting developments among producers of theatrical motion pictures is the production of condensed versions of leading historical and epochal films. Such a picture is the one-reel "Spirit of the Plains" which was produced by Paramount Pictures, Inc., in 1936.³ This picture is based on "The Covered Wagon" recent feature release, "The Plainsman." The production was sponsored educationally by Miss Mary Clint Irion⁴ of the Los Angeles County Schools and Miss Marian Evans⁵ of the San Diego Public Schools, both of whom are recognized authorities in the field of visual instruction.

"The Spirit of the Plains" follows an original theme by Ralph Jester that opens just as the Civil War ends. President Lincoln is seen predicting to his Cabinet that thousands of demobilized soldiers will find new homes and new lives in the West. In the picture we see the wagon trains at the shore of the Missouri River, the lonely trek across the plains, the revolt of the Indian as his food supply is threatened by the slaughter of the buffalo, and the cowboy on the open range gradually confined as steel rails and barbed wire change the West. Finally the wheat farmer finds his enemy in the dust storms and battles courageously against odds indicating that the spirit of the plains remains undaunted. An intelligent

3. Op. cit., p. 20

4. Ibid., p. 21

5. Ibid., p. 21

narrative tells the story in a manner that is entirely free from the usual "wise crack" that are prevalent in the majority of theatrically produced educational films. The picture is available at low cost either on a purchase or rental basis, and many schools will make use of it.

The possibilities of such productions seem almost unlimited. Most picture producers have spent millions of dollars in research and in the building of costly sets and staging of expensive scenes. Much of this material is authentic and could be utilized effectively in schools. It is hoped there will be a rapid increase in the production of educational films of this nature. The actual production cost should be very low and the resulting income from rentals and from the sale of prints should be very sufficient to cover production costs and yield a fair rental.

Another development in the theatrical field which merits attention is the series of historical shorts which are being produced by Warner Brothers Pictures,⁶ Inc. The first of these, "Give Me Liberty," is a two-reel production in natural color, telling the story of the Virginia Assembly in the earlier Revolutionary Period and ending with the famous speech of Patrick Henry. It is an interesting picture from beginning to end and leads to an effective climax in Patrick Henry's speech. The resulting film is an excellent short subject for

6. Ibid., p. 21

use among theaters and a very fine picture for use in the study of American History. Such films will do much to awaken interest in the usually dry pages of history tests and will encourage students to conduct research of their own free will rather than in response to definite assignments in their courses.

The most extensive plan for the production of sound films for educational use is that which was started some years ago by Erpi Picture Consultants, Inc. This organization is a subsidiary of the Western Electric Company which gives it a stability not enjoyed by many of the smaller educational film producers. The production plans have been organized with good judgment and the outstanding educational authority in the United States have been called upon for advice and guidance. The project was designed to train the classroom teacher. Others are films in the field of research and science, which appeal to scientists, administrators, and special groups concerning the problem of child training.

One of the earlier projects of Erpi now nearing completion was that of producing a series of eighty reels of sound motion pictures to be used in teaching senior high school and freshman college courses. These have been produced in cooperation with the University of Chicago⁷ and have been built to fit the work of the first year in that University. Many of the subjects

7. Victor Animatograph Corp., Survey on the Utilization of Visual Aids, Chicago, Illinois, pp. 8-9

are so arranged that they can be used with equal effectiveness in the last two years of high school, or in more advanced college courses. A more recent expansion of this plan includes subjects which are more elementary in nature, designed for use in the intermediate grades, as well as in high school.

Another interesting development in the use of sound films for educational and recreational purposes has come about through the efforts of Films, Inc., to provide satisfactory service of CCC camps scattered throughout the United States. This company arranged for some of the leading producers to prepare 16-mm. prints of outstanding theatrical films. These films have been used extensively among schools, clubs, and other community organizations. It is probable this field of service will be extended and one of the major problems will be that of avoiding direct 16-mm. films almost exclusively.

There remains a need for carefully planned series of educational sound films which are designed for use in the elementary grades. Some of the visual instruction departments in the largest city schools systems have been unable to secure a sufficiently wide assortment of good educational films to warrant the investment in projection equipment. Attention is being given to this problem and it is likely the somewhat limited list of sound motion pictures for the elementary field will be increased rather rapidly.

There are certain educational advantaged sound may be expected to provide. In the first place, the sound film provides an opportunity to bring to the classroom near-natural reproductions of life and people in all parts of the world. The sound film makes it possible to bring into the classroom or before other groups, demonstration lectures by eminent authorities who would not be accessible otherwise. The sound film is used effectively in teaching the functions and relationships of the instruments of the orchestra and it is probable the use of sound film in the teaching of music will be expanded in the future. It is also likely that an international film exchange may make available to schools in all parts of the world the best subjects produced in any part. Possibly this will include films designed for the teaching of language and certainly it will include the best geographical and historical subjects.

TYPES OF SOUND PRODUCTION

The earlier educational sound films were silent films accompanied by sound which was recorded on a disc. This was known as the "Vitaphone Process", and it has been superceded in both the theatrical and educational fields by sound-on-film productions, the sound is recorded along the edge of the film, using a narrow strip of space between the picture and the line of sprocket holes on one side of the film. The type of sound recording has developed to the point where it is extremely accurate in reproduction. The new ultra-violet ray recording process developed by RCA has increased the range of accurate recording and reproduction to the point

where it is now possible to record and reproduce almost any sound which can be detected by the human ear. ⁸

The first 16-mm. synchronized sound subjects of the sound-on-disc type and it was believed by many that it would be impossible to reproduce a satisfactory recording of sound on 16-mm. film. There were two problems to be solved. One was the problem of securing sufficient horizontal space to permit the use of a sound track and the other was the problem of reducing the sound to the point where the normal recording of 1000 feet of 35-mm. sound track could be included in the 400 feet length of one reel of 16-mm. film. These problems have not been solved to the point where 16-mm. recording and reproduction of sound has a range as wide as that accomplished with 35-mm. On the other hand, the developments have reached the point where 16-mm. sound film recording and reproducing covers the entire range of normal sounds detected by the ear. Accordingly, the 16-mm. sound-on-film equipment has replaced the sound-on-disc and its reproduction equipment.

The projection equipment for the use of sound films is necessarily more expensive than silent projection equipment. The projectors range in price from \$350 to \$900, including projectors, amplifiers speakers, and other accessory equipment required for operation. The less expensive equipments are those which are designed primarily for use in class-rooms,

⁸. DeVry, Herman A., Values of Movied and Talkies in Education, Chicago, Illinois.

while the best projectors, naturally selling at higher prices, may be used in auditoriums and in other large spaces where it is necessary to project a large picture much further than the ordinary length of a classroom. All of the 16-mm. projectors are portable, but any equipment which is expected to give the best of service should not be moved or shipped any more than is absolutely necessary, inasmuch as there is always danger of damage in handling.

The projectors mentioned in the appendix are available with illumination units which range in power from 500 watt incandescent lamps to 750 and 1,000 watt incandescent lamps. In addition, some of the more recent projectors offered to the school and industrial market are equipped to use the incandescent lamps of low intensity arc lamps. It is believed by some that these more powerful projectors may be used to a considerable extent in the future by small theaters which do not operate continuously and must keep their operating cost at a minimum in order to realize a profit.

There will be some additional complications in the manipulation of the sound equipment as compared with the projectors for silent films. However, the sound projector have been simplified in operation to the point where any person who is at all mechanically inclined will be able to operate the equipment under ordinary conditions. The earlier projectors were too operated on alternating current only, but many of the more recently produced equipments operate on either A. C. or D. C. power.

The recent books by Colonel Devereaux⁹ and Dr. Brunstetter¹⁰ are so complete in their treatment of sound motion pictures for educational purposes that it would be inadvisable to attempt any additional suggestions. Those who are planning to make use of sound film in connection with their work are available for the University of Chicago Press. Each contains many suggestions which will be a distinct aid to the teacher, supervisor, or administrator in the school or school system which is using or planning to use sound pictures.

TELEVISION

"Interest in television, throughout the world, is great. It was prophesied that by June of 1937, television receivers would be obtainable as readily as radio receiving sets. There was some sort of conspiracy among manufacturers to hold off the sale of television receivers until every effort has been made to dispose of radio receiving sets on hand.¹¹

Consider for a moment some of the problems which have a direct bearing upon the development and use of television. Perhaps the greatest is that of overcoming distance. In the experiments with television to date, it has not been possible to telecast with any degree of reliability more than a distance of fifty miles from the transmitter. This would require transmitting equipment at distance intervals of eighty to one hundred miles throughout the United States in order to reach all Sections. The overwhelming cost of such a comprehensive

9. Devereaux, F. L., The Educational Talking Picture, University of Chicago Press, 1933.

10. Brunstetter, M. R., How to use the Educational Film, University of Chicago Press, 1936.

11. Op. Cit., p. 24.

net work of transmitters is obvious. Another problem is that of reproducing the image in sufficient size. In the majority of the experimental trials, the picture at the receiver has been barely large enough to be seen without straining the eye. The solution of these problems may be accomplished within a reasonable number of months or may be a number of years.

In the meantime, those in educational work who may be hesitating to secure radio or motion picture equipment for school use for fear of early absolescence due to rapid television developments may dismiss those fears and proceed with reasonable assurance that any up-to-date equipment installed this year or next, or the next, will be extremely usefull for many years to come. The development of the motion picture and the subsequent use among schools has not caused a decrease in the use of still pictures in education. The development of the sound motion picture has not caused a decrease in the use of strictly educational silent films among schools. The rapidly increasing use of radio in education has not caused a decrease in the use of phonograph records. On the contrary, each new development seems to validate the potential values of earlier development and cause older types of audio-visual aids to become more important in the assemblies. Similarly, it is expected that the development of television, however, rapid of delayed it may be, will but serve to increase the educational importance and use of all types of audio-visual aids among schools.

SUMMARY

The sound film slide is composed of two major parts. One is the series of still pictures printed on 35-mm. motion picture positive for projection by use of a film slide projector. The other part is the recorded sound which illustrates or explains the picture series.

One of the greatest factors which has retarded the more widespread use of sound motion picture equipment among schools has been the lack of a sufficient quantity and variety of good educational sound film. This situation is being corrected rather rapidly and it should not be long until the supply will be sufficient to meet the requirements of the average school. The most extensive plan for the production of sound films for educational use is that which was started some years ago by Erpi Picture Consultants, Inc.

The earlier educational sound films were silent films accompanied by sound which was recorded on a disc. This was known as the "Vitaphone Process", and it has been superseded in both the theatrical and educational fields by sound-on-film recording.

The projection equipment for the use of sound films is necessarily more expensive than silent projection equipment. The projectors range in price from \$350 to \$900, including projectors, amplifiers, speakers, and other accessory equipment required for operation. The less expensive equipments are those which are designed primarily for use in classrooms while the best projectors, naturally selling at higher

prices, may be used in auditoriums and in other large spaces where it is necessary to project a large picture much further than the ordinary length of a classroom. All of the 16-mm. projectors are portable.

The projectors mentioned in the appendix are available with illumination units which range in power from 500 watt incandescent lamps to 750 and 1000 watt incandescent lamps. In addition, some of the more recent projectors offered to the school and industrial market are equipped to use the incandescent lamps of low intensity arc lamps.

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In the meantime, those in educational work who may be hesitating to secure radio or motion picture equipment for school use for fear of early adolescence due to rapid television developments may dismiss those fears and proceed with reasonable assurance that any up-to-date equipment installed this year or next will be extremely useful for many years to come.

CHAPTER IV

MECHANICAL ASPECTS OF SOUND-FILM USE

Schools interested in developing programs of audio-visual instruction will find it profitable to devote time and thought at the outset to the minor mechanical arrangements which play such a large part in facilitating or hindering the teacher's use of films. Selecting satisfactory projection equipment and providing for its operation and maintenance, adapting classrooms for projection, developing a convenient system for distributing films, establishing adequate facilities for storing and repairing films, and maintaining a simple, but complete, record of film use--these are problems which if unsolved will discourage consistent use of the films. From the teacher's standpoint the value derived from a film may be overshadowed by difficulties encountered in presenting it. Details such as a proper darkening of the room, or the prompt replacement of projector lamps, tend to assume unduly large proportions. Perhaps this is because physical needs can be seen and therefore readily appreciated; perhaps it is because so often the lack of carefully planned provisions for showing films has been allowed to defeat the teacher's effort to make use of available films. The experience of those school systems where successful visual education programs are operating indicates that thorough planning and adequate budgetary support can eliminate mechanical difficulties. It is the purpose here to assist the planning of those who are beginning the use of sound films by presenting practical suggestions which are the outgrowth of studies in

this field. .

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"Those interested in a more comprehensive discussion of the physical and mechanical aspects of film usage are referred to other volumes of audio-visual instruction."¹

OCT 27 1939

Sound-reproducing equipment in the 16-mm. size represents a remarkable recent technological achievement. A few years ago the reproduction of 16-mm. talking pictures, with the sound coming from the film itself, was only a vision. Pioneering attempts proved its possibility; rapidly various refinements have been made until now the 16-mm. sound film, from the mechanical as well as the educational standpoint, is an efficient auditorium device.

Some schools considering the purchase of an equipment hesitate between the 16-mm. type and the larger size, the 35-mm. The choice, assuming that the difference in cost is not a factor, depends entirely upon the purposes to be served. For large auditoriums in which entertainment programs are to be given, the 35-mm. sound equipment is most desirable. On the other hand, a program of instruction centered in the classrooms requires the 16-mm. sound-film projector. Even auditorium instruction, where the room is not unusually large, has been successfully carried on through 16-mm. projector. Furthermore, 35-mm. sound films cost approximately twice as much as 16-mm. sound films. The portability, efficiency, and lower cost of the 16-mm. sound-film projector have made it exceptionally suitable

1. Devereaux, The Education Talking Picture, Chaps. VIII, XI, XII, and A. V. Dorris, Visual Instruction in the Public Schools (Boston: Ginn & Co., 1929)

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for classroom use.

The selection of 16-mm. sound-film equipment should be which have been developed for the purchase of other school equipment and supplies. The practices of analyzing equipment in terms of specifications, and holding competitive tryouts, take the guesswork out of buying. When there is a choice between two or three projectors, the ultimate consideration is the performance which the machine is expected to give.

Among the factors to be studied are the following:

1. Intensity of illumination.

If the projector is to be used in auditoriums and large classrooms the amount of illumination provided should be equal to the demand. It should be noted that the intensity of screen illumination is not governed solely by the size of the projector lamp; it depends also upon the efficiency of the optical system employed in the projector.

2. Steadiness of the picture projected.

A flickering image causes eyestrain, and hinders the students' concentration upon the subject matter being presented.

3. Safeguards against film damage.

This is especially important where teachers and students are to operate the equipment. Automatic safeguards which largely eliminate the possibility of damage to films increase the life of the film many times over and protect the film-library investment.

4. Quality of sound.

With good recording and favorable acoustics, the sound reproduced by equipment should be perfectly intelligible. If the sound is not intelligible, the effectiveness of the instruction provided by the talking picture is materially lessened.

5. Ease of operation.

A sound-film projector should not only be easy to operate but it should look easy to operate. Teachers should be able to master the necessary skills readily, without the need for technical knowledge or special mechanical aptitude. The operating controls must be conveniently accessible. It should be possible to unpack the equipment and get it ready for projection quickly.

6. Portability.

The equipment should be light enough so that it may be easily carried from classroom to classroom and from building to building.

7. Durability.

The quality of materials used and the general sturdiness of construction should be such that with reasonable care freedom from breakdown is assured.

8. Accessibility of repair service.

For the prompt repair of any breakage or difficulties it is highly important that efficient repair service, by a trained representative of the equipment manufacturer, should be immediately available. Complete utilization of the projector and films is possible only where scheduled use is planned; interruptions in the program due to the equipment getting out of order seriously limit the teacher's use.

9. Accessories.

Many 16-mm. sound-film projectors have special appliances which extend their usefulness. Among these are the phonograph jack, to permit the use of the amplifier with an electrically operated turntable, the microphone may be plugged; and the single-frame projection device. If such accessories are to be utilized, they should be demonstrated so that their efficiency may be judged.

10. Cost.

This factor is relative, that is a matter of determining on the basis of the other standards, the desired degree of excellence required locally of an equipment.²

Many schools will wish to use the 16-mm. equipment in small auditoriums as well as in the classrooms. Where this is the case, the projector selected should be capable of providing a satisfactory picture in the auditorium and sufficient sound volume without distortion. Some models now on the market are intended for classroom use only. The safest

2. Brunstetter, M. R., How To Use the Educational Sound Film, The University of Chicago Press, Chicago, Illinois.

plan is to test the model under consideration both in the classroom and in the auditorium.

When the kind of projector has been settled, the next question for many school systems is that of determining how many machines are to be purchased. There can be no exact formula for the solution of this problem. The best plan, of course, is to have a projector for each school building, where films are being continuously used. But a projector is serving its purpose only when films are being shown; there is no point in installing an equipment in a building for four or five showings a week, to remain idle the rest of the time. The determining factor, if maximum utilization is to be secured, is the probable number of showings required. Therefore, a school system which is beginning a program of talking-picture use may find it desirable to circulate an equipment among a group of three or four buildings, until the demand from individual schools has reached the point at which a projector is needed for each building.

One of the first considerations in planning the use of talking pictures is the matter of providing operation service. Who should operate the machine--teachers, principals, supervisors, students, custodians, or a special technician? How are these individuals to be trained in the mechanics of projection? These are questions of policy to be decided according to local personnel conditions and the extent to which films are to be utilized in the schools.

In the first place, most teachers can learn to operate

a 16-mm. sound-film projector. From the standpoint of operation the machine is not much more complicated than the stereopticon or silent-projector. Current models have been refined to the point where their operation is like that of a silent-film projector to which radio controls have been added. Given competent instruction and sufficient opportunity to practice, any teacher or older student can quickly acquire the necessary skill to manage assembly showings. Certainly these equipments, with automatic safeguards, are no more complex than the electric sewing machine appears to the average man!.

The simplicity of the 16-mm. sound-film reproducing equipment is evident in the description of operation techniques for a typical 16-mm. sound-film projector. To place the machine in operation the projector-amplifies unit, in its carrying case, is set on a table or stand at the proper distance from the screen. The power wire is uncoiled and connected from the projector to a nearby electrical outlet. The loud-speaker unit, with the front and back lids removed, is placed in the best acoustic position at the front of the room, near the screen. The speech cord from the amplifier is plugged into the loudspeaker. After the arms holding the reel of film and the take-up are mounted in place on the outside of the projector case, the reel is threaded as in a silent-film projector except for the additional loops around the sound-channel mechanism below the aperture. In the meantime the amplifier switch has been turned on to permit the tubes to warm up, as in a radio. With the projector lamp turned on, the projector

motor is started, the picture focused on the screen, and the showing begins. At the end of the projection a power rewind may be utilized to replace the film on the original reel, ready for the next user. Oiling is a simple matter, the points receiving oil being marked for quick location. The entire equipment can be packed up for transportation in three or four minutes.³ An illustrated manual of operation accompanies the machine, with large threading diagrams conveniently accessible for reference on the projector case door.

Many school systems introducing the use of talking pictures decide to have the teachers handle all the operation. No difficulty has been found in training them to become sufficiently adapt to manage classroom projections. Science teachers particularly have demonstrated an aptitude for this work, perhaps because of their constant use of laboratory apparatus. In certain schools groups of older students selected from grades IX to XII have become skillful operators.

It should be pointed out, however, that there is a decided difference between the minimum skill required for the successful showings of one reel and the competence which provides showings over extended period without damage to films or equipment. For example, incorrect threading of a film may not be at all noticeable during the first showing; the resulting sprocket punctures

3. For a detailed description of typical 16-mm. sound-film equipment see Devereaux, op. cit., pp. 196-99.

will appear to mar the screen picture during subsequent showings. Faulty adjustments may be made on the sound controls which have no immediate effect but tend to deteriorate tubes and photoelectric cells rapidly. Furthermore, a teacher who receives the projector for a single period in his classroom may not oil it. In this respect the sound-film reproducer is like an automobile; there is more to successful operation over a period of time than the mere ability to drive without bumping into other cars! No matter who is selected to operate the projector, there should be a program of thorough training--training which does not cease the first time the novice gets through a showing successfully. The local representative of the equipment manufacturer is usually quite ready to co-operate in teaching the operation and care of the machine, especially since proper techniques of the projector and maintenance lessen the number of service calls he will be required to make.

Some school systems will have sufficient extended program of film use, even at the outset, to justify the service of a special technician responsible for the operation, transportation, and maintenance of equipment and films. When there is a continuous demand for projection service throughout the school day, it is more economical to pay the salary of a special operator rather than to consume the more valuable time of teachers, principals, or supervisors. Furthermore, the special operator may help to solve the problem of film distribution and maintenance. It is easier and quicker for one person to

become adapt in all aspects of the physical handling of films and equipment than it is to develop even minimum operating skill in a large group of teachers. For many schools the solution may be to utilize teachers and student operators during the initial stages of the film program; a special operator may be employed when the demand for film service becomes continuous.

In a large city-school system all the operation of the projector was managed by a member of the utility staff, temporarily released from his regular duties. He transported the equipment from building to building, according to a schedule based on the requisitions which had been received. It should be noted that the plan of having a special operator insured greater flexibility of use; on some days he visited as many as three different buildings, showing from three to six films in each. He used a light delivery truck belonging to the school maintenance department.

One school system in which the director of visual instruction had familiarized teachers with the operation of 16-mm. silent-film projectors secured a sound equipment similar to the silent projectors standard in the system. The techniques of operating the new equipment were explained and demonstrated at a general meeting; in addition, the director and the clerk provided special "lessons" and practice sessions for teachers either at the individual schools or at the department office.

In another school system it was decided that all teachers making use of the sound films should learn to operate the

equipment. By the close of the school year at least three teachers in each of the elementary schools were competent operators and could instruct others. In this school system a number of film previews at the outset provided practice periods for teachers to become skillful in operating the projector. In addition, operation procedures were discussed at the principals' meetings, and the science supervisor assisted teachers with the mechanics of projection where necessary.

Highschool students, with practice and supervision, become quite proficient in running the 16-mm. sound-film projector. In one junior highschool the head of the science department was thoroughly familiar with the operation of the silent 16-mm. projector, and in addition, was quite competent in mechanical details. Consequently he quickly acquired a thorough knowledge of the sound-film equipment and immediately trained four eighth grade boys to serve as assistant operators. Their work must be judged successful since not only were showings made on schedule and without interruption but almost no damage was done to the films over a five months' period. The instructor stated: "The machine is operated with ease by either teacher or pupil operators. In the five months of continuous service, the machine, operated by at least seven persons under all kinds of conditions, has been free from any kind of breakdown except the natural wearing out of the lamps."

Where one equipment is being utilized in a large number of schools, as in a county-school system, the problem of operation must be given adequate consideration if the film library is to be preserved from damage. If only one equipment

is available and travel distances are fairly short, it may be advantageous to employ a special operator, who will take the machine and films to the various schools on requisition, manage the showings and keep both films and projector in good repair. Such a plan would be feasible at least in the beginning stages of the county program of film use. When the demands for the films in the various schools become greater than one operator can manage, some of the larger school systems of the county may prefer the purchase equipments for their own use, drawing upon the county office only for films. Each community purchasing an equipment could very readily provide thorough training for the teachers who were to use it. This would allow the traveling operator to devote his attention to the smaller schools in the more remote sections of the country.

Two operation problems deserve discussion. One has to do with electrical power. In many districts the power supply differs from the 110 volt, 50-60-cycle type of alternating current which is most common. Some equipment manufacturerers supply models especially adapted for use with the 25-50-cycle type of alternating current. Where the power supply fluctuates, an expensive line current resistor in the extension cord to the projector lamps through excessively high voltages. Some rural communities have their own powerplant, producing direct current. In these cases the use of a converter is necessary. Equipment manufacturers supply information as to the type of converter required for their projectors. For rural schools

which lack any source of electrical power, a light truck may be equipped with dynamo and converter, or a portable generator with engine secured. This equipment is particularly valuable where there is a large number of schools in rural area lacking electrical power.

Another problem in some schools is that of securing operators' licenses. Some states require individuals who are to operate 16-mm. sound-film projection equipment usually presents no difficulty if operators are reasonably skilful and if the machine is oiled and cleaned regularly. Damage has resulted from excessive oiling as well as from lack of oiling; the best plan is to have a regular schedule for lubrication, posted at some convenient place. Responsibility for oiling, cleaning, and minor adjustments should be assigned to one individual--the special operator, a teacher, or a clerk. It is advantageous to have someone in the system who is competent to make minor repairs; this frequently saves time and insures continuous use of the equipment. Definite provisions for prompt service should be made with manufacturer's representing the machine that was purchased.

The following suggestion summarize the factors to be considered in equipping a room which permits the best reproduction of sound films and other audio-visual devices under desirable educational conditions.

Central Location--If a number of classes is to be served by a room specially prepared for the use of talking pictures a central location is desirable. Where the building has been planned in departmental units, it may be feasible to have one room in each unit equipped for this purpose. If the building

is small enough that one projection room is adequate, the talking-picture studio should be conveniently located with respect to every other classroom.

Maximum utilization--If the use of talking pictures in the school has reached the point where the studio is the constant demand for projection, no other adaptations will be necessary at certain times to utilize this room for other purposes, such as a science lecture-room, music-room, or community-discussion center. A careful study of all possible uses should be made when the room is designed.

Seating arrangement--In planning the audio-visual studio consideration must be given to the age of the students which it is expected to accommodate. Where the studio is to serve students in grades I-VIII, the seats should be of the movable type. Small folding chairs should be available for the use of the primary-grade children. When the room is not being used by primary-grade children, these seats may be folded and stored in one corner of the room or in an adjacent closet.

For the older children movable chairs with tablet arms will permit taking notes, copying black-board material, and filling out examination blanks.

One type of audio-visual studio has the tiered-floor construction with banks of auditorium-type seats. This arrangement permits accommodation of a maximum number of students, although it somewhat limits multiple use of space.

Darkening facilities--For the use of all types of audio-visual instructional aids which require a darkened room for projection purposes, facilities should be available for quickly and effectively darkening the room. If strong light is allowed to enter, the definition of the screen image is blurred and the educational value of the picture lessened. This condition also imposes considerable eyestrain, which naturally results in loss of interest and attention.

The devices for darkening projection rooms are opaque shades or opaque draw-curtains. The materials used should be durable and tested for their resistance to the passage of light. The problem of excluding light for the sides and bottom of the window is sometimes solved by the provision of wide slots, in which the durtain or shade travels. Another device is the system of electrical-ly actuated opaque shades, which may be drawn by the pressure of the control button.

The problem of excluding light on warm days when the windows must be kept open and the shades blow in and out is closely allied to the problem of providing adequate ventilation facilities. If the studio is an inside room with no windows, darkening facilities are, of course, unnecessary, and a special heating and ventilating unit can be installed for this one room.

Special equipment--In addition to the projection equipment, the audio-visual studio will be provided with a screen, a suitable table for the projector-amplifier, and a stand or wall mount for the loud-speaker.

Either the encased portable or the permanently mounted screen may be used. In general, the screen may be used as a single piece or, if more than one piece, the seam should be placed horizontally so as to permit easy rolling.

The over-all length of the permanently mounted screen should be equal to, or greater than, its width so that when it is pulled down for use, the center of the picture will be approximately one-half ceiling height from the floor. For example, in a room 12 feet high with a picture $4\frac{1}{2}$ feet by 6 feet approximately, the screen should be 6 feet from the floor.

A stand for the projector unit is necessary. One excellent school-built model is about 20 inches wide, 3 feet long, and 3 feet high. Mounted on small rubber-tired wheels, it can be moved readily into position or out of the way, as required. It has a shelf for holding about six reels of 16-mm. film, and compartment for storing the two units of the 16-mm. sound-reproducing equipment. This storage space is provided with doors, so that the whole equipment may be inclosed when not in use. The projector stand another school built is about 18 inches square and 4 feet high, mounted on casters, with shelving provided for films. Another type is the mental-tubing stand with a top which may be tilted for various projection angles.

Some blackboard space should be included, preferable on the right-hand wall. Storage cabinets for sets of slides and flat pictures, and compartments for silent projection equipment are desirable.

Wiring System--There should be an outlet in the rear on the room, adjacent to the projector stand. It is desirable to have a permanent installation for the speech cord from the projector-amplifier to the loudspeaker in the front of the room. This wire may be laid in conduit, but should not close to the power line. A switch controlling the room

lighting may be located in the rear of the studio close to the projector stand, so that the operator may turn off the lights when he is ready to begin projection. A refinement of the usual lighting for classrooms is a series of lighting troughs at the top of the walls, controlled by a rheostat switch, so that several degrees of illumination may be secured.

Acoustic conditions--The acoustics of the studio should permit the satisfactory reproduction of recorded or broadcast sound, without disturbance to adjacent classes. The problem of acoustics for the audio-visual studio is concerned with two factors:--(1) the proper reproduction of sound within the room and (2) the prevention of the transmission of sound to adjacent rooms. The reproduction sound within the room is satisfactory when there is a minimum of reverberation or disturbing echoes. To prevent the transmission of sound to adjacent rooms, soundproof doors and baffles in the ventilating ducts may be installed

Heating and ventilating--The heating and ventilating system of the studio should be used that comfortable conditions are maintained. Although the central heating-ventilating system in some cases may prove entirely satisfactory for the audio-visual studio, it will be preferable to install a special unit for this room to prevent the transmission of interfering sound to other classrooms and to provide proper ventilation in warm weather.⁴

SUMMARY

Schools interested in developing programs of audio-visual instruction will find it profitable to devote time and thought at the outset to the minor mechanical arrangements which play such a large part in facilitating or hindering the teacher's use of films. From the teacher's standpoint the value derived from a film may

4. Brunstetter, M. R., How To Use The Educational Sound Film, The University of Chicago Press, Chicago, Illinois, P. 131.

be overshadowed by the difficulties encountered in presenting it to the students.

Some schools considering the purchase of an equipment hesitate between the 16-mm. type and the larger size, the 35-mm. The choice, assuming that the difference in cost is not a factor, depends entirely upon the purposes to be served.

Among the factors to be studied in choosing a machine are the following:--

1. Intensity of illumination.
2. Safeguards against film damage.
3. Steadiness of the picture projected.
4. Quality of sound.
5. Ease of operation.
6. Portability.
7. Durability.
8. Accessibility of repair service.
9. Accessories.
10. Cost.

Many schools will wish to use the 16-mm. equipment in small auditoriums as well as in the classrooms. Where this is the case, the projector selected should be capable of providing a satisfactory picture in auditorium and sufficient sound volume without distortion. Some models now on the market are intended for classroom use only. The safest plan is to test the model under consideration both in the classroom and in the auditorium.

Some of the things to take in consideration in equipping an audio-visual studio are as follows:--

1. Central location.
2. Maximum utilization.
3. Seating arrangements.
4. Darkening facilities.
5. Special equipment.
 - a. Screen.
 - b. Tables for the projector-amplifier.
 - c. Stand.
6. Wiring system.
7. Acoustic conditions.
8. Heating and ventilating.

CHAPTER V.

PHOTOPLAY APPRECIATION IN THE SCHOOL

If the millions of boys and girls attending our high schools could be taught, as a part of their English instruction, standards for judging photoplays, it is likely that a movement to raise the level of taste among the rising generation of movie-goers would succeed. Mass education to make high-school students intelligently critical of current photoplays would be likely to mean not only an advance in the work of modernizing the English curriculum, but a slight advance along the entire frontier of human thought and discussion.

The plan of this experiment was set up with the help of two English teachers in the Lindsay High School. Three groups of students were chosen for the purpose of comparing the reactions of instructed and uninstructed classes and measuring differences in appreciation. Twenty-five students from both the instructed and uninstructed groups were chosen from the seventh and eighth grades, ninth and tenth grades, and eleventh and twelfth grades. The experimental groups were given an outline for discussing a photoplay which we call work sheet A. found on page 50. Three rating sheets for judging photoplays and measuring appreciation were used by the experimental and control groups. Samples are found on pages 51, 52, and 53.

OUTLINE FOR DISCUSSING A PHOTOPLAY

(Worksheet A)

Pupil's Name _____ Age _____ Grade _____ Date _____

Title of Picture _____ Where Seen _____

1. What type of photoplay is it (such as comedy, tragedy, farce, musical comedy, social drama, melodrama, travelogue, etc.)? _____
2. Name the director and, if possible mention an interesting fact about him. _____
3. What is the setting of the story (time and place)? _____
4. Did you like the setting? _____ If so, why? If not why not? _____
5. Give the names of the leading characters (not names of the actors) and tell how each is introduced. _____
6. What is the basic theme (main idea or purpose of the film)? _____
7. What purposes in life do the main characters have? _____
8. Of what value to society (humanity) are these purposes? _____
9. What fundamental conflict does the photoplay present? _____
10. What motives are revealed by the leading characters? _____
11. Express your attitude toward these motives. _____
12. With what life problems are the leading characters confronted? _____
13. How are these problems solved? _____
14. What action marks the major climax of the photoplay? _____
15. What outstanding character traits are emphasized in the climax? _____
16. What is your opinion of the ending of the photoplay? _____
17. What do you consider the best scene in the picture? _____
18. What scene would you omit or change? _____
19. What have you learned about life from the picture? _____
20. Remarks or general comment. _____

RATING-SCALE FOR JUDGING PHOTOPLAYS AND MEASURING APPRECIATION--GRADES 7 and 8.

Name of Pupil	Age	Grade	Sex	School			
Name of Picture	Producer	Author	Director	Star	Score	Weight	Weight Score
Main Idea.....	Unimportant -2(very) -1(rather)	0	Important 1(rather) 2(very)			10	
Story.....	Illogical -2(very) -1(rather)	0	Logical 1(rather) 2(very)			20	
Characters.....	Artificial -2(very) -1(rather)	0	Life-like 1(rather) 2(very)			20	
Photography.....	Ordinary or Crude -2(very) -1(rather)	0	Unusual or Beautiful 1(rather) 2(very)			10	
Value to Humanity.....	Destructive -2(very) -1(rather)	0	Constructive 1(rather) 2(very)			20	
Acting.....	False or Exaggerated -2(very) -1(rather)	0	Sincere, Natural 1(rather) 2(very)			10	
Enjoyment.....	Uninteresting -2(very) -1(rather)	0	Interesting 1(rather) 2(very)			10	
					TOTAL SCORE		
					PERCENTAGE SCORE		

Note:--The score multiplied by the weight in each case equals the weighted score.

For example, if the story is rated plus 2, the weighted score is 40.

The highest possible total score is 200. To obtain the percentage score, divide the total score by 2.

RATING-SCALE FOR JUDGING PHOTOPLAYS AND MEASURING APPRECIATION--Grades 9 and 10.

Name of Pupil	Age	Grade	Sex	School					
Name of Picture	Producer		Author	Director		Star			
	Unimportant	Not Clear	Important	Score	Weight	Weighted Score			
Fundamental Ideas.....	-2(very) -1(rather)	0	1(rather) 2(very)		10				
Story Structure.....	-2(very) -1(rather)	0	1(rather) 2(very)		20				
Characters.....	-2(very) -1(Rather)	0	1(rather) 2(very)		15				
Settings and Photography....	-2(very) -1(r rather)	0	1(rather) 2(very)		5				
Dialogue.....	-2(very) -1(rather)	0	1(rather) 2(very)		5				
Value to Society.....	-2(very) -1(rather)	0	1(rather) 2(very)		10				
Acting.....	-2(very) -1(rather)	0	1(rather) 2(very)		10				
Speech.....	-2(very) -1(rather)	0	1(rather) 2(very)		5				
Direction.....	-2(very) -1(rather)	0	1(rather) 2(very)		10				
Enjoyment.....	-2(very) -1(rather)	0	1(rather) 2(very)		10				
TOTAL SCORE									
PERCENTAGE SCORE									

Note:--The score which the pupil assigns to each item, multiplied by the weight, gives the weighted score.
 Highest possible score is 200. To obtain percentage score, divide total score by 2.

RATING -SCALE FOR JUDGING PHOTOPLAYS AND MEASURING APPRECIATION--GRADE 11 AND 12

Name of Pupil	Age	Grade	Sex	School			
Name of Picture	Producer	Author	Director	Star			
					Score	Weight	Wt. Sc.
Basic Theme.....	Lacking	Of Little or No Importance	Timely, Significant	Vitaly Important	Momentous, Epical		10
	#1	0	1	2	3		
Story Composition.....	Incoherent	Possible, but Not Plausible	Rather Logical	Highly Probable	Flawless in Continuity		20
	-1	0	1	2	3		
Characterizations.....	Overdrawn Unnatural	Possible	Logical Likable	Touching	Geniune		15
	-1	0	1	2	3		
Dialogue.....	Trite	Colorless	Rather witty	Clever	Brillant		5
	-1	0	1	2	3		
Voice or Star.....	Annoying	Uncultured	Noticeable	Effective	Versatile		5
	-1	0	1	2	3		
Acting of Star.....	Overdone	Artificial	Casual	Charming	Sincere		10
	-1	0	1	2	3		
Director.....	Weak	Irregular	Smooth	Convincing	Immaginative		10
	-1	0	1	2	3		
Pictorial Composition.....	Ugly	Ordinary	Appropriate	Usual	Beautiful		5
	-1	0	1	2	3		
Social Value.....	Destructive	Harmless	Wholesome	Commendable	High Ideals		10
	-1	0	1	2	3		
Enjoyment.....	Boring	No Interest	Entertaining	Thrilling	Absorbing		10
	-1	0	1	2	3		

Note: The Score which the pupil assigns to each item, multiplied by the weight, gives the weighted score. Highest possible total score is 300. To obtain PERCENTAGE SCORE, divide total score by 3.

Total Score
Percentage Score

For the sake of the experiment free admission for the whole groups had to be arranged. The steps in the procedure were, therefore, as follows:--

1. To set up in the Lindsay junior-high-school and senior-high-school boys and girls experimental groups and equivalent control groups and to give them initial tests in photoplay appreciation.

2. To enlist the occupation of a local theater so that both the experimental groups and the control groups, with their teachers, might see the same series of photoplays without charge.

3. To let the experimental pupils discuss and rate the photoplays as part of their English work, but to let the control pupils merely attend the theater without class discussions or further educational activities of any kind.

4. To set up as criteria final tests in photoplay appreciation, the judgements of the experimental teachers as to the pictures seen.

5. To let both the experimental and the control pupils, after the final tests, rank the pictures seen, in order of merit, for statistical comparison with teachers' criteria by means of the rank-difference method of correlation.

By virtue of the set-up, the experimental groups and the control groups were matched as to age, grade, sex, and I. Q. Group A has an average age of 13 years 1 month, taken from seventh and

eighth grades, twenty-four boys and twenty six girls with a mean I. Q. of 105. Group B had an average age of 15 years 4 months, taken from ninth and tenth grades, twenty-six boys and twenty-four girls with a mean I. Q. of 106. Group C had an average age of 16 years 7 months, taken from eleventh and twelfth grades, twenty-five boys and twenty-five girls with a mean I. Q. of 105.

To accelerate appreciation, the experimental pupils discussed criteria for judging films and applied these criteria to the films they were seeing. The pupils in all groups did see exactly the same pictures. Study-guides were provided for three pictures, and a general worksheet useful for any picture was supplied, together with suggestive rating scales,¹ indicating criteria for judging basic theme, story composition, characterization, dialogue, voice of star, direction, pictorial composition, social value, and general enjoyment. Worksheet and rating-scales are found on pages 50, 51, 52, and 53. During the experimental period, the pupils kept diaries, made scrap-books and glossaries,,read critical reviews and analyzed them, conducted symposiums and class debates. Under the leadership of the teacher, they found out meaning of strong and imaginative direction.

If the groups of children studied in this experiment

1. Photoplay Appreciation In American High Schools, William Lewin, English monograph No. 2, National Council of Teachers of English.

may be considered a random sampling of adolescent boys and girls attending public schools in Oklahoma, it would appear that the most common habit of highschool students in relation to selecting a photoplay is discussing it with a friend. In the initial questionnaire 52.7 percent and in the final questionnaire 94 percent of the pupils indicated this habit. The increase of 79.4 percent may be ascribed either to the experimental instruction or to greater maturity. The fact that in the final analysis fourteen out of fifteen of the students stated that they were in the habit of discussing the selection of pictures with a friend is a significant one.

The second most common habit is seeing whether the story is by a good author. A little over half of our highschool boys and girls, or 50.7 percent, are in the habit of noting whether or not the literary source of a screen play is an argument in its favor. As a result of the instruction, the percentage in this report was raised to 89.3, a gain of 77.1 percent.

Third in importance is the habit of finding out who directed a picture. Only 30.7 percent, or one in three, indicated at the out set of the experiment that they considered the director before choosing a photoplay. However, as a result of the instruction, boys and girls became intensely interested in the work of the director. About four-fifth of them, or 80.7 percent,

formed the habit of discovering the director's name when shopping for pictures. This represents a gain of 162.8 percent in respect to interest in the director. Desire for information about the work of the director. increased so rapidly that it is safe to say that an excellent way to begin the consideration of photoplay appreciation is to discuss the function of the director and to arouse interest as to who are some of the best directors.

Fourth in importance is the habit of discussing it with a member of the family. Only 20.6 percent, or less than one in seven, indicated at the outset of the experiment that they considered discussing the photoplay with a member of your family. Less than four-fifth at the end of the experiment, or about 78 percent considered it important. The fact that in the final analysis four out of five of the students stated that they were in the habit of discussing the selection of pictures with individual members of their families is a significant one.

The fifth most common habit in relation to shopping for a photoplay is reading what a critic says about the picture. Normally 22.7 percent of the students indicate that they read critical reveiws. This percentage was increased to 58 percent by the experimental instruction, a gain of 159.9 percent. It would thus appear that with a little guidance young people will readily form the habit of reading critical reviews.

The last thing boys and girls ordinarily think of when selecting a picture is asking a teacher about it.

only one in fifty has this habit, but under instruction the percentage was found to rise from 2 percent to 44.2 percent, an extraordinary gain of 2110 percent. Students discovered that their teacher's judgment was extremely valuable in respect to photoplays, and they came to consider the teacher an authority in the field.

SUMMARY

Photoplay appreciation in relation to adolescent boys and girls attending public schools in Oklahoma may be summarized in the following statements:--

1. Discussing it with a friend.
2. Story is by a good author.
3. Finding out who directed picture.
4. Discussing it with a member of family.
5. What a critic says about the picture?
6. Ask a teacher about it.

An increase in the appreciation of photoplays by use of the experiment shows by actual figures from 58 percent to 2110 percent. This alone is enough to convince anyone that the experiment was of importance.

CHAPTER VI.

FINDINGS, RECOMMENDATIONS, AND CONCLUSIONS.

In the beginning of Chapter I it was stated that the purpose of this study is to define a program of audio-visual aids in public schools and measure enjoyment as a factor in photoplay appreciation in education.

On page 60 you will find Form X of Preliminary Questionnaire in Photoplay Appreciation¹ which was given at the beginning of the experiment. On page 61 is Form Y of the Final Questionnaire in Photoplay Appreciation.² A tabulation of the results from the two questionnaires just mentioned will be found in table 1 found on page 62. The percentage of gain in photoplay appreciation was found to be 71.1 percent.

In table 2 found on page 63 it is shown that the experimental groups was within .8 percent of the teacher's criteria in judging photoplay and measuring appreciation while the control groups dropped within 10 percent of the teacher's criteria.

As the results of tables 3 and 4 found on pages 64 and 65 a summary is given in table 5 which shows that the average percentage of gain to the remembrance of producer, author, director, and star (both male and female) is within 2 percent of each other.

1. Lewin, William, Photoplay Appreciation In American High Schools, English Monograph No. 8, National Council of Teachers of English. P. 107.

2. Ibid., P. 109.

FORM X OF PRELIMINARY QUESTIONNAIRE IN PHOTOPLAY APPRECIATION

Name of Pupil.....School.....

Teacher.....Grade.....

1. Indicate by crosses which of these photoplays you have seen.

Tom Sawyer..... Spirit of Notre Dame.....

Huckleberry Finn..... You Can't Take It With You....

Brother Rat..... Judge Hardy's Children.....

2. Indicate, by crosses, whether you are in the habit of doing any of the following before attending a photoplay:

Finding out who directed the picture.....

Seeing whether the story is by a good author.....

Reading what a critic says about the picture.....

Asking one of your teachers about it.....

Discussing it with a member of your family.....

Discussing it with a friend.....

3. In your home is the question of what photoplay to see brought up at a family discussion at least once a month? No...Yes...

4. Do you own or have use of a movie camera? No...Yes...

5. Indicate by cross your opinion as to which is the more important in the making of a photoplay. Cameraman...Director...

6. Indicate by cross your opinion as to which is more important to consider as a basis for choosing a photoplay to attend:
The Star...The Story...

7. Do you enjoy going to movies so much that you consider it one of your favorite leisure occupations? No...Yes...

8. Do you usually discuss with your friends the photoplay you have seen? No...Yes...

9. Have you ever prepared a theme or talk on a photoplay? No...Yes...

10. Must a photoplay, to be a good one, end happily? No...Yes...

FORM Y OF FINAL QUESTIONNAIRE IN PHOTOPLAY APPRECIATION

Pupil.....School.....City.....

Teacher.....Grade.....Date.....

1. Indicate by crosses which three (3) of the following ten photoplays have been generally rated highest by professional critics and editors.

-Boys Town
-Girls on Probation
-Brother Rat
-Tow Sawyer
-Garden of the Moon
-Wings of the Navy
-Huckleberry Finn
-You Can't Take It With You
-Spirit of Notre Dame
-That Certain Age

2. If possible, name a photoplay you would enjoy seeing a second time.

.....

3. Indicate, by marking crosses, whether you are in the habit of doing any of the following before attending a photoplay:

-Finding whether the story is by a good author.
-Finding out the name of the producer.
-Reading what a critic says about the picture.
-Asking one of your teachers about it.
-Discussing it with a member of your family.
-Discussing it with a friend.

4. In your home is the question of what photoplay to see brought up at a family discussion at least once a month? No...Yes...

5. Do you own or have the use of a movie camera? No...Yes...

6. Indicate by a cross your opinion as to which is the more important in the making of a photoplay. Camerman...Director...

7. Indicate by a cross your opinion as to which is more important in the making of a photoplay. The Star...The Story...

8. Do you enjoy going to movies so much that you consider it one of your favorite leisure occupations? No...Yes...

9. Do you usually discuss your favorite photoplay with a friend?
No...Yes...

10. Must a photoplay, to be good, end happily? No...Yes...

TABLE 1:--TABULATION OF RESULTS FROM QUESTIONNAIRE GIVEN TO 150 STUDENTS TO FIND OUT PHOTOPLAY APPRECIATION.

	Preliminary		Final		Difference
	Yes	No	Yes	No	
(1) Find out who directed the picture.	46	104	127	23	81
(2) Seeing whether the story is by a good author.	76	74	134	16	58
(3) Reading what a critic says about the picture.	34	116	87	83	53
(4) Asking one of your teachers about it.	3	147	67	83	64
(5) Discussing it with a member of your family.	39	111	127	88	88
(6) Discussing it with a friend.	79	71	141	62	62
(7) In your home is the question of what photoplay to see brought up at a family discussion at least once a month?	119	31	147	28	28
(8) Do you own or have the use of a movie camera?	11	139	29	18	18
(9) Do you enjoy going to movies so much that you consider it one of your favorite leisure occupations?	121	29	147	26	26
(10) Do you usually discuss with your friends the photoplay you have seen?	79	71	141	62	62
(11) Must a photoplay, to be good, end happily?	93	57	73	20	-20
TOTALS....	700	1220	1220	520	
AVERAGE....	63.6	110.9	110.9	47.3	

The percent of gain was found to be 71.1%.

TABLE 2:--TABULATION OF RESULTS IN PERCENTAGES FROM RATING-SCALE FOR JUDGING PHOTOPLAYS AND MEASURING APPRECIATION IN GRADES 7, 8, 9, 10, 11, and 12 IN THE LINDSAY JUNIOR AND SENIOR HIGH SCHOOLS.

GROUPS	: EXPERIMENTAL	: CONTROL	: TEACHER'S CRITERIA
	: (Percent.Score)	: (Percent.Sc.)	: (Percent. Score)
A	: 59.5	: 54.2	: 61.1
B	: 56.4	: 58.1	: 57.8
C	: 72.3	: 58.6	: 70.6
AVERAGE	: 62.7	: 56.9	: 63.2

TABLE 3:--TABULATION OF RESULTS OF EXPERIMENTAL GROUPS
AS TO THE REMEMBRANCE OF PRODUCER, AUTHOR, DIRECTOR,
AND STAR GIVING MALE AND FEMALE IN COMPARISON.

EXPERIMENTAL: GROUPS	PRODUCER		AUTHOR		DIRECTOR		STAR	
	M	F	M	F	M	F	M	F
A	9	11	7	8	8	9	11	12
B	9	10	6	8	7	8	11	11
C	8	11	6	8	7	8	11	12
AVERAGE	8.7	10.7	6.3	8	7.3	8.3	11	11.7

TABLE 4:--TABULATION OF RESULTS OF CONTROL GROUPS AS TO THE REMEMBRANCE OF PRODUCER, AUTHOR, DIRECTOR, AND STAR GIVING MALE AND FEMALE IN COMPARISON.

CONTORL GROUPS	PRODUCER		AUTHOR		DIRECTOR		STAR	
	M	F	M	F	M	F	M	F
A	5	11	7	8	2	4	9	9
B	6	7	5	6	5	5	9	8
C	5	6	3	5	4	5	8	10
AVERAGE	5.3	8	5	6.3	3.8	4.7	8.7	9

TABLE 5:--TABULATION SHOWING PERCENTAGES OF GAIN OF
EXPERIMENTAL GROUPS OVER CONTROL GROUPS AS TO THE
REMEMBRANCE OF PRODUCER, AUTHOR, DIRECTOR, STAR,
GIVING MALE AND FEMALE IN COMPARISON.

	:	MALE	:	FEMALE
PRODUCER	:	62.4	:	70.0
AUTHOR	:	65.8	:	60.0
DIRECTOR	:	91.1	:	76.6
Star	:	23.4	:	30.1
TOTALS	:	244.7	:	236.6
AV. % OF GAIN	:	61.1	:	59.2

RECOMMENDATIONS

Following are the recommendatins which the writer of this thesis wishes to put forth in regard to audio-visual aids and photoplay appreciation in the public junior and senior high schools:--

1. That each school should have a 16-mm. sound film projector equipped for classroom use in connection of teaching photoplay appreciation.

2. That units of instruction in photoplay appreciation be introduced into the schools, with a view to improve popular standards of taste and judgment in relation to photoplay by mass education.

3. That experimentation be initiated with view to formulate children's criteria, in harmany with those of English teachers, for the selection and evaluation of photoplays.

4. That courses in methods of teaching photoplay appreciation be included in the curricula of schools with a view of setting forth the most successful methodologies that have been developed through experimentation.

5. That a committee of English teachers preview selected current photoplays, with a view to suggesting which productions are worthy of condideration in the English classroom.

6. That the publication of study-guides to selected current photoplays be developed.

One of the greatest factors which has retarded the more widespread use of sound motion picture equipment among schools has been the lack of a sufficient quantity and variety of good educational sound film. This situation is being corrected rather rapidly and it should not be long until the supply will be sufficient to meet the requirements of the average school. The most extensive plan for the production of sound films for educational use is that which was started some years ago by Erpi Picture Consultants, Inc.

In the meantime, those in educational work who may be hesitating to secure radio or ~~motion~~ picture equipment for school use for fear of early adolescence due to rapid television developments may dismiss those fears and proceed with reasonable assurance that any up-to-date equipment installed this year or next will be extremely useful for many years to come.

SOURCES OF VISUAL AIDS
AND
EQUIPMENT FOR INSTRUCTIONAL USE IN SCHOOLS

The following list of some of the principal distributors of visual and auditory aids, although rather comprehensive, is neither complete nor approved. The lists of governmental and educational agencies are far more nearly complete, however, than the lists of commercial dealers. In the latter group only the home offices of the better known companies are included. Individuals desiring better information should communicate directly with the sources indicated.

It will be noted that industrial firms that produce visual aids for free distribution to schools have not been included. Educational are divided as to the advisability of admitting to schools visual aids that have either an advertising or propaganda objective. In most instances, the better aids prepared by these companies are available for distribution by several of the organizations listed. It will also be noted that railroads, steamship lines, and various tourist bureaus are not included since their films, slides and pictures usually are available from sources which are listed.

In addition to the State departments of education and other State agencies listed, several State Departments of health, conservation, motor vehicles, parks, highways, fish and game commissions, and forestry commissions have motion pictures, lantern, slides, and still pictures available for circulation and free distribution to schools within their own State.

1. Dent, Ellsworth C., The Audio-Visual Handbook, published by the Society For Visual Education, Chicago, Illinois, P. 161.

APPENDIX I.

LATERN SLIDES

FEDERAL GOVERNMENT

Division of Cooperative Extension, U. S. Department of
Agriculture, Washington, D. C.

Bureau of Entomology and Plant Quarantine, U. S.
Department of Agriculture, Washington, D. C.

Bureau of Fisheries, U. S. Department of Agriculture,
Washington, D. C.

Food and Drug Administration, U. S. Department of
Agriculture, Washington, D. C.

Weather Bureau, U. S. Department of Agriculture,
Washington, D. C.

Civilian Conservation Corps, Office of Information and
Education, Washington, D. C.

Federal Emergency Administration of Public Works,
Washington, D. C.

Geological Survey, U. S. Department of the Interior,
4800 Forbes St., Pittsburg, Pa.

Employment Service, U. S. Department of Labor,
Washington, D. C.

Pan American Union, Motion Picture Section, Washington,
D. C.

Social Security Board, Informational Service,
Washington, D. C.

Costal Guard, U. S. Treasury Department, Washington,
D. C.

Works Progress Administration, Washington, D. C.

STATE DEPARTMENTS

California State Library, Sacramento, California (State)

Connecticut State Department of Education, Hartford,
Connecticut (State)

COLLEGES AND UNIVERSITIES

Brigham Young University, Extension Division,
Provo, Utah (National)

Louisiana State University, Extension Division,
Baton Rouge, La. (National)

Smith College Department of Art, Hillyer Art
Gallery, Northampton, Mass. (National)

University of Arizona, Extension Service, Tucson,
Arizona (National)

University of California, Extension Division,
Berkeley, California (National)

University of Chicago Press, Department of Visual
Aids, Ellis Ave., Chicago, Ill. (National)

University of Iowa, Department of Visual Instruction,
Iowa City, Iowa (National)

University of Kansas, Bureau of Visual Instruction,
Extension Division, Lawrence, Kansas (National)

University of Vermont, Fleming Museum, Burlington,
Vt. (National)

Yale University, Gallery of Fine Arts, New Haven,
Conn. (National)

APPENDIX II.

FILMSTRIPS, SLIDEFILMS, AND STILLFILMS

FEDERAL GOVERNMENT

Division of Publications, Office of Information, U. S.
Department of Agriculture, Washington, D. C.

Division of Cooperative Extension, U. S. Department of
Agriculture, Washington, D. C.

Bureau of Entomology and Plant Quarantine, U. S.
Department of Agriculture, Washington, D. C.

Forest Service, U. S. Department of Agriculture,
Washington, D. C.

Forest Emergency Administration of Public Works, Washing-
ton, D. C.

Farm Credit Administration of Public Works, Washington,
D. C.

Division of Motion Pictures, U. S. Department of the
Interior, Washington, D. C.

Regional Agricultural Credit Association, Washington,
D. C.

Rural Electrification Administration, Washington, D. C.

COLLEGES AND UNIVERSITIES

Brigham Young University, Extension Division, Provo,
Utah (National)

Oklahoma Agricultural & Mechanical College, Department
of Visual Education, Stillwater, Oklahoma (State)

Princeton University Library, Princeton, N. J.
(National)

University of Arizona, Extension Division, Tucson,
Ariz. (National)

University of Oklahoma, Extension Division, Bureau of
Visual Education, Norman Oklahoma (State)

APPENDIX III.

MOTION PICTURES

FEDERAL GOVERNMENT

Division of Motion Pictures, Extension Service,
U. S. Department of Agriculture, Washington,
D. C.

Bureau of Foreign and Domestic Commerce, U. S.
Department of Commerce, Washington, D. C.

Federal Emergency Administration of Public Works,
Washington, D. C.

Federal Housing Administration, Washington, D. C.

Inland Waterways Corporation, Washington, D. C.

Division of Motion Pictures, U. S. Department
of the Interior, Washington, D. C.

Bureau of Mines, U. S. Department of the Interior,
4800 Forbes St., Pittsburgh, Pa.

Geological Survey, U. S. Department of the Interior,
Washington, D. C.

Children's Bureau, U. S. Department of Labor,
Washington, D. C.

Women's Bureau, U. S. Department of Labor,
Washington, D. C.

Recruiting Division, Naval Department, Washington,
D. C.

Pan American Union, Motion Pictures, Washington,
D. C.

Resettlement Administration, Washington, D. C.

Social Security Board, Information Service,
Washington, D. C.

Costal Guard, U. S. Treasury Department, Washington,
D. C.

Tennessee Valley Authority, Information Division,
~~Knoxville~~, Tenn.

Works Progress Administration, Information Service,
Washington, D. C.

COLLEGES AND UNIVERSITIES

Georgia School of Technology, Atlanta, Ga. (National)

Harvard Film Service, The Biological Laboratories,
Harvard University, Cambridge, Mass. (National)

Louisiana State University, Extension Division,
Baton Rouge, La. (National)

Mount Union College, Alliance, Ohio (National)

Saint Ambrose College, Davenport, Iowa (National)

University of Arizona, Department of Public Service,
Extension Division, Tucson, Ariz. (National)

University of California, Department of Public Service,
Extension Division, Berkeley, California (National)

University of Chicago Press, Department of Visual Aids,
Ellis Ave., Chicago, Ill. (National)

University of Denver Library, Denver, Colo. (National)

University of Iowa, Department of Visual Instruction,
Iowa City, Iowa (National)

University of Vermont, Fleming Museum, Burlington, Vt.
(National)

Yale University Press Film Service, 386 4th. Ave.,
New York, N. Y. (National)

APPENDIX IV.

CAMERAS

COMMERCIAL DEALERS

- Agfa-Ansco Corp., 29 Charles St., Bringhamton, N. Y.
- Akeley Camera Shop Inc., 175 Varick St., New York, N.
- American Bolex Company, 155 East 44th Street, New York, N. Y.
- Bass Camera Company, 179 W. Madison St., Chicago, Ill.
- Bausch & Lomb Optical Company, 635 St. Paul Stl, Rochester, N. Y.
- Bell & Howell Company, 1801 Larchmont Ave., Chicago, Ill.
- Debry, Andre, Inc., 115 W. 45th St., New York, N. Y.
- Devry, Herman A., Inc., 1111 Armitage Ave., Chicago, Ill.
- Eastman Kodak Company, 343 State St., Rochester, N. Y.
- Folmer Graflex Corp., 154 Clarissa St., Rochester, N. Y.
- Hollywood Camera Exchange, 1600 N. Cahuega Blvd., Hollywood, Calif.
- International Research Corporation (Argus Camera) 140 Fourth Ave., Ann Arbor, Mich.
- Leitz, Ernest, Inc., 60 East 10th St., New York, N. Y.
- Spencer Lens Company, 19 Doat St., Buffalo, N. Y.
- Victor Animatograph Corporation, 427 West 4th St., Davenport, Iowa.
- Willoughby Camera Stores Inc., 110 West 32nd St., New York, N. Y.
- Zeiss, Carl, Inc., 485 Fifthe Ave., New York, N. Y.

MOTION-PICTURE PROJECTORS

COMMERCIAL DEALERS

- American Bolex Company, Inc. (16 and 35-mm)¹
155 East 44th St., New York, N. Y.
- Ampro Corporation (16-mm)¹² 1801 Larchmont
Ave., Chicago, Ill.
- Bell & Howell Company (16 and 35-mm)¹² 2839-51 North
Western Ave., Chicago, Ill.
- Debie, Andre, Inc. (16 and 35-mm)¹² 1111 Armitage
Ave., Chicago, Ill.
- Devry, Herman A., Inc. (16 and 35-mm) 115 West 45th St.,
New York, N. Y.
- Eastman Kodak Company, 343 State St. (16-mm)² Rochester,
New York.
- Holmes Projector Company (16 and 35-mm)¹² 1815 Orchard
Street, Chicago, Ill.
- International Projector Corporation (16 and 35-mm)¹,
92 Gold St., New York, N. Y.
- RCA Manufacturing Company, Inc., Educational Dept.
(16 and 35-mm)¹ Camden, N. J.
- Victor Animatograph Corporation, 527 W. 4th St.,
(16-mm)¹ Davenport, Iowa.

1. Sound.

2. Silent.

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