THE USE OF AUDITORY AND VISUAL AIDS IN

EIGHTY PUBLIC SCHOOLS OF TEXAS

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CHAPTER I

INTRODUCTION

The Problem

The problem of this investigation was two-fold; first, to obtain general information on auditory and visual aids and their apparent values in the schoolroom; and second, to find out to what extent these aids were used in eighty representative schools of Texas during 1945-1946.

Sources of Data and Method of Procedure

Extensive reading of books and editorials dealing with audio-visual aids prefaced this study and served as a means of obtaining data for the first part of the problem. Questionnaires regarding the use of auditory and visual aids in specified school systems were sent to one hundred school superintendents in Texas for obtaining data used in the second part of the study. Eighty answers were received. Twenty-nine reports were from superintendents in small cities of 4,000 to 5,000 population; twenty-nine others were from cities of 6,000 to 10,000 population, and twenty-two were from cities of 11,000

to 20,000 population.

A form of the questionnaire sent to the superintendents is included in this study as Appendix A. Answers from these questionnaires were compiled and used as Chapter III of the present investigation.

Definition of Terms

The term "auditory and visual aids" is used in the present study as meaning certain teaching tools which are seen or heard or both. Hoban says that

> a visual aid is any picture, model, object, or device which provides casual experience to the learner for the purpose of (1) introducing, building up, enriching, or clarifying abstract concepts, (2) developing desirable attitudes, and (3) stimulating further activity on the part of the learner.[1]

Roberts says that visual education is a method of imparting knowledge which is based upon the psychological principle that one has a better understanding of the things he sees than of those he reads or hears discussed.[2] The same concept is true regarding auditory aids in that knowledges gained from the radio and other teaching devices of the same classification appear to be highly advantageous.

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[1]Charles F. Hoban, Charles F. Hoban, Jr., and Samuel B. Zisman, Visualizing the Curriculum, p. 9.

[2]A. B. Roberts, "An Introduction to Visual Aids," School Activities, January, 1939, p. 212.

Mechanical aids include movies, radio, television, facsimile broadcasting, lantern slides, film strips, and the phonograph. Non-mechanical aids include objects, stereographs, models, pictures, illustrations, maps, charts, graphs, posters, cartoons, and comic strips, school journeys, museums, bulletin boards, blackboards, arts and crafts.

Significance of the Study

The writer's experience as a classroom teacher and radio instructor in the armed forces during World War II impressed the need for teaching tools that vitalize learning. Modern school programs that are to be truly effective must be built upon meaningful materials and methods.

Auditory and visual aids are new forces in education. Koon and Noble say that "studies have proved that these new visual and auditory aids present learning matter so forcibly that educators can no longer deny them their proper place in a dynamic curriculum."[3]

Auditory and visual aids are effective instruments of instruction to the degree that they approach reality. They are valuable in direct ratio to the nature and extent of the pupils' previous experience and to their

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[3]Cline M. Koon and Allen W. Noble, National Visual Education Directory, p. 7.

intellectual maturity.[4]

Auditory and visual aids should not be regarded as separate materials from textbooks, workbooks, and other teaching tools, but they should be considered in reference to them. Auditory and visual aids have their functions and values and should be considered and used in relation to all other tools for the purpose of achieving the goals of education.

It is generally concluded that classroom activities can be vitalized by the effective use of auditory and visual aids as teaching materials. Such material is said to increase initial learning, the permanence of learning, and the ease of learning. It is also increasingly concluded that these aids are a great help in teaching backward children. Such aids are said to increase interest, attention, self-activity, and voluntary reading. If these statements are true, then it is imperative that these teaching devices be made available to the schools, and that teachers be trained to use aids in such a way that the pupils may profit from their use.

The recommendations of educators and the increasing participation in the auditory and visual aids program by many schools lead the writer to believe that this investigation of new forces in education is significant.

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[4] Ibid.

The concepts of modern education in America today demand not only a realistic philosophy of education, but also the use of realistic methods and materials. Fundamental educational theories frequently have been accepted verbally and then lost in the use of conventional textbooks, lectures, examinations, grades and other teaching devices. Today many of the traditional methods are being supplanted or supplemented by auditory and visual aids.

The writer's theory of the pre-eminence of audio-visual learning is substantiated by McKown and Roberts in the following comments:

> The average learner uses touch, taste, and smell infrequently, and hence they represent but a relatively small part of his sensory experiencing. In short, an individual gets the great proportion through his eyes, a smaller proportion through his ears, and a great deal smaller proportion through his other senses.[5]

Organization of Materials

Chapter I of the present study contains a definition of auditory and visual aids and their classification. Chapter II contains a discussion of the following instructional tools and their values: motion pictures, radio, television, facsimile broadcasting, lantern slides, film strips, stereographs, phonographs, objects,

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[5]Harry C. McKown and Alvin B. Roberts, Audio-Visual Aids to Instruction, p. 7.

and models in museums; photographs, illustrations, maps, charts, graphs, posters, cartoons and comic strips, excursions, bulletin boards, blackboards, arts and crafts. A compilation of data obtained from the questionnaires regarding the types and uses of auditory and visual aids comprises Chapter III. A summary, the findings, and conclusions appear in Chapter IV.

CHAPTER II

TYPES OF AUDITORY AND VISUAL AIDS AND THEIR APPARENT VALUES

Auditory and visual aids considered in the present investigation include motion pictures, radio, television, facsimile broadcasting, lantern slides, film strips, stereographs, phonographs, objects and models, photographs, illustrations, maps, charts, graphs, posters, cartoons, comic strips, excursions, bulletin boards, blackboards, arts and crafts. These instructional tools are designed to aid both teachers and students in achieving the goals of education and are considered as necessary parts of the school program in many communities.

The Motion Picture

The motion picture is a medium of communication that has almost unlimited potentialities for influencing human behavior. Hoban says:

> . . . there is abundant evidence to indicate that the instructional motion picture has great value as a motivating force which develops initiative and activity on the part of the pupil beyond that developed through ordinary classroom routine or the unsystematic use of other visual aids.[1]

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[1]Hoban, Hoban, and Zisman, op. cit., p. 97.

Movies establish certain values in the minds of practically all children. Jersild says that "apart from leaving impressions concerning the plot and action, a movie may influence children's attitudes and ideas concerning customs, dress, manners, and morals."[2] Peterson and Thurstone emphasize this concept in the following comments:

> In conclusion we may say that the experiments we conducted show that motion pictures have definite, lasting effects on the social attitudes of children and that a number of pictures pertaining to the same issue may have a cumulative effect on attitude.[3]

Holaday and Stoddard made an extensive investigation regarding children's getting and remembering ideas from movies. They found that after a six-weeks' period had elapsed, children retained, on the average, ninety per cent of the knowledge they retained the day after the movie was shown.[4]

Leach summed up the purpose of school movies when he said that the present problem of visual education is

> to capture the attractive technique and the emotional appeal of the commercial motion pictures and to install documentary films and other films of educational value within the walls of the schools.[5]

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[2]Arthur T. Jersild, Child Psychology, p. 456.

[3]Ruth C. Peterson and L. L. Thurstone, Motion Pictures and the Social Attitudes of Children, p. 66.

[4]Perry W. Holaday and George D. Stoddard, Getting Ideas from the Movies, p. 65.

[5]H. G. Leach, "Education by Film," Forum, July, 1938, pp. 1-2.

Motion pictures have the following four functions in the instructional field: (1) to depict continuity of processes and events, (2) to depict observable action, (3) to depict unobservable action, and (4) to develop attitudes.[6]

Instructional films may be separated into the following seven classifications: (1) those demonstrating a process, as mining or manufacturing; (2) those demonstrating a skill, as teaching typewriting; (3) those dramatizing an event, as the settling of the West; (4) those explaining some industrial product, as operating elevator motors; (5) those having emotional emphasis, such as expressing power, durability, and stamina by means of advertising through expressionistic photography and fantastic musical scores; (6) those documenting some social situation, as a propaganda film; and (7) those intended merely to furnish background, as pictorial films of common experiences with interesting people or situations.[6]

The sound film is more valuable as a teaching medium than the silent film, in most instances. This is especially true in teaching foreign languages. It seems much easier to pronounce words correctly if they have been heard rather than merely seen. In elementary school

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[6] Ibid., p. 98. [7] Ibid., pp. 121-126.

science, the same conditions obtain when children hear the natural sounds of animals and birds. The experience is more realistic than if they had seen only pictures or read stories. The activity of insects can be shown by animated pictures. The growth of plants can be seen by means of time-lapse photography. Micro-photography makes pictures of organisms understandable. This is of much value because ordinarily the pictures of these organs are too small to be seen with the eye. The availability of pictures that have been photographed through a microscope to a size that can be seen easily is a valuable contribution.

The following barriers to learning can be overcome or at least partially eliminated by the use of movies as teaching aids: distance, seasons, deficiencies in reading abilities, limitations of sight, restrictions of hearing, restrictions of the printed page, and inadequate laboratory equipment.

Hoban says that a great number of investigations have been made relative to the effectiveness of motion pictures in relationship to initial learning of concrete factual materials.[8] The result of the studies indicates that the improvement in learning in classes in which motion

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[8] Ibid., p. 113.

pictures were used, as compared with classes in which purely verbal methods were used, varied from about ten to thirty-five per cent. The investigator also added that the improvement in learning resulting from the use of movies was greatest when the pictures were closely related with the daily curriculum.

Hoban made the following comments regarding studies about the value of motion pictures:

> By far the greatest number of investigations of the effectiveness of motion pictures in instruction have been in relation to initial learning of concrete factual material. . . . When compared with purely verbal methods of instruction or with methods in which other visual aids were not systematically used, the improvement in learning of concrete factual material of the classes in which motion pictures were used as compared with equivalent classes in which motion pictures were not used varied from approximately 10 to approximately 35 per cent. . . . The improvement in learning resulting from the use of the films was greatest where the motion pictures were most highly correlated with the curriculum, and where most recently produced films were used.[9]

Hoban reported an investigation in which an effort was made to determine the value of sound films in teaching science.[10] Findings indicated that the development of thought and reasoning processes was greater in the group which used the movies than in other groups where no audio-visual aids were used.

Koon reported a study in which the efficiency of

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[9] Ibid.

[10] Ibid., p. 114.

teaching geography was increased from twenty-five to fifty per cent, in accordance with the measuring devices employed in the study, by the use of audio-visual aids.[11] Similarly, Freeman, Shaw, and Walker found that children learned proper handwriting position more easily if taught by motion pictures than if subjected to verbal methods.[12]

Lewis reported that the use of movies in literature tends to increase interest by clarifying essential facts.[13] In addition, these aids assist in creating moods of emotional effects which lead to a proper appreciation of the material under consideration.

McConnell reported the use of films in literature classes in a rural school in Michigan.[14] In many instances the films were effective substitutes for experience which the children had never had, but which was necessary for their understanding and appreciation of some of the literary classics.

In music classes, films are said to be excellent for teaching the functions of different instruments in an orchestra. They also may be used effectively for

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[11]Cline K. Koon, School Use of Visual Aids, p. 51.

[12]Frank N. Freeman, Visual Education, pp. 110-112.

[13]William Lewis, "The Use of Visual Aids in Literature," English Journal (High School Edition), September, 1931, p. 589.

[14]J. D. McConnell, "In the Rural School," Nation's Schools, June, 1939, pp. 41-42.

teaching music appreciation in the lower grades.

Many other investigations have been made regarding the contributions of the movies to the achievement of the goals of modern education. The concensus of opinion seems to be that the movie is a valuable audio-visual aid and should be used effectively in many learning situations.

Radio

Radio is, potentially, the greatest single agency for education the world has ever known. Tyler says that this instrument, therefore, cannot be ignored in a system of modern education.[15] Cooper says that no medium of communication produced in the past five hundred years has had more profound influence and effect upon contemporary trends in civilization than has the radio.[16]

Leavenson believes that radio has much to contribute to education, but that American schools are lamentably reluctant in making use of this socializing instrument.[17] He says that there is ample evidence that this teaching aid, when used effectively, is one of the finest devices

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[15]I. Keith Tyler, "Radio in the High School," Educational Research, XIV (November 13, 1935), 208-212.

[16]Lewis B. Cooper, "Radio and Cooperative Programs," The Texas Parent-Teacher, December, 1937, p. 12.

[17]William B. Leavenson, Teaching through Radio, p. v.

for helping people to live happily in modern society. He adds that enterprising school systems will take advantage of the opportunity to be of service to their students during the day, and also to adults at night. The chance to present cultural material for home listening during the evening hours is being utilized in many localities by educational leaders.

Radio education probably has meant more in the Midwest than in any other part of the United States because of the great distances separating settlements. This startling new means of communication and education is a promising means of bringing sparsely settled communities into contact for purposes of entertainment and education. In addition, it is a means of meeting unexpected emergencies, such as tragic blizzards and similar emergencies that affect the American school child, especially in isolated rural areas.[18]

The specific contributions of radio to the school program can be measured only by their contributions to the general objectives of education. Truly it may be said that radio is timely; it gives pupils a sense of participation; it can be amplified into an emotional force in the creation of desirable attitudes; it can

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[18]Albert Reed, Radio Education Pioneering in the Midwest, pp. 13-14.

integrate the learner's experiences; it can challenge dogmatic teaching; it can be used to develop discrimination; it can conquer space; it can help in continuous curriculum revision; it can improve teaching methods; it can interpret the school to the community; it can provide the teacher with opportunities for closer observation of individual children's listening habits, comprehension, and special interests; and it can render invaluable aid to the handicapped children who cannot attend school.[19]

Schoolroom radio programs generally include some or all of the following types:

1. Listening to straight talk, in which only one person discusses a certain subject.
2. Listening to some person's interviews with outstanding personalities and well-known experts.
3. Listening to panel or round table discussions.
4. Listening to "on-the-spot" broadcasts such as tuning in on the opening of Congress.
5. Listening to the Quiz-Bee or questions and answers.
6. Participating in a broadcast or having a regular class lesson put on the air.
7. Listening to the forum or debate.
8. Listening to dramatization.
9. Listening to a musical program.
10. Participating in a demonstration radio lesson.[20]

Television

Americans generally use the future tense when discussing television, but this technical advance is a

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[19] Ibid., pp. 6-19.

[20] Ibid., p. 48.

reality. "It is now technically possible for each school in a community to receive the sound and sight of a drama, an illustrated talk, a sports event, or a sound film."[21] Television receivers probably will not be as common in classrooms as radio sets for some time, but they are potential media for teaching and learning.

Facsimile Broadcasting

The broadcasting of printed material is called facsimile broadcasting.[22] The operation is analogous to that of regular sound broadcasting, but instead of merely listening to a program, the listener receives printed copies of the program. The printing is made possible by the employment of an electric eye which picks up the variations in light waves.

> At the receiving end the facsimile signals are picked up by the radio receiver, but instead of being used to produce sound waves through a loud speaker, they are made to actuate the printed mechanism and produce black and white half-tone marks in accordance with the original material at the transmitting end. . . . A talk on new dresses can be illustrated by photographs and even patterns which can be used later. A news commentator while discussing world events can supply his listeners with maps for reference.[23]

Schools have not made wide use of facsimile broadcasting as yet, but it may prove to be of real service

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[21] Ibid., p. 453. [22] Ibid., p. 459. [23] Ibid.

as a teaching aid in modern educational programs.

Lantern Slides

The lantern slide is a valuable aid in teaching and is considered second to the sound film in importance by many teachers. It is to be kept in mind that there are two types of slides -- those made by pupils and those purchased from commercial companies. Both types should be used to clarify the ideas presented in lesson materials and to develop subject matter, thus making instruction richer and more meaningful.

Lantern slides are exceptionally valuable in the social-studies curriculum. Copies of the Declaration of Independence, the Constitution of the United States, and other important historical documents, as well as pictures of important men and women, may be obtained and used effectively in the classroom. People of other countries often can be best understood when children see films, slides, or other audio-visual aids which explain foreign homes, occupations, and ways of life. Global friendship can be developed effectively by the use of instruments which will help American children to have sympathy and admiration for all people of the world. In this connection, the globe, which is a miniature model of the world, often plays an important part. Similarly, maps and charts

can be used frequently.

The following general uses may be made of lantern slides: (1) as a preview of a lesson; (2) as an introduction to a lesson; (3) as a review of a lesson. Regardless of their purpose, slides should always be authentic. The photographic and mechanical quality should be good. The pictures should pertain to the topic under discussion and should lead into an enrichment of the activity for the entire class.

Film Strips

A roll of film carrying positive images which are projected on a screen according to the technique of the lantern slide is called a film strip.[24] This visual aid has the ability to show succession or progression, since the film generally contains a unified collection of pictures on a certain subject.

The uses and value of the film strip are enhanced by the following characteristics: (1) they are useful as a substitute for other experiences; (2) they contain unity and variety in picturization; (3) they are convenient in size and in operation; (4) they are easily maintained; and (5) they are economical in cost.[25]

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[24]Hoban, Hoban, and Zisman, op. cit., p. 169.

[25]Ibid., pp. 170-171.

The Stereograph

The stereograph is the only kind of picture which gives the three dimensional effect. Because of this ability, it is valuable in illustrating round objects. For example, the Colosseum in Rome is much more beautiful when it can be seen as it really is than when represented in a flat picture.

The stereograph is highly valuable in the primary and elementary grades. It is also an effective instrument in teaching mathematics in the high school.

The stereograph occupies pre-eminence among pictorial material because it produces the illusion of reality and because it has a carry-over value from home to school. It makes instruction more meaningful and causes the pupil to be an active agent in the learning situation.

The Phonograph

Phonographs are particularly valuable in rural schools where electricity is not available, but they are effective teaching devices for all schools. Music classes probably use this audio-visual aid more than other classes because of its adaptability to the music program.

In addition to its use as a demonstration device for teaching vocal and instrumental music, the phonograph

is useful for speech classes. Correct diction can be taught more easily if it is heard than if it is seen in print.

Speech correctionists find that faulty speech and incorrect speaking habits can be remedied and foreign language can be taught by means of recording the pupil's conversation and then letting him hear his own voice and speech. Records also have been used effectively in teaching penmanship, typewriting, and shorthand.

Objects and Models in Museums

Object and model collections are important parts of instructional equipment in many schools. Most museums, made up of these collections, are systematically arranged and properly labeled. This type of visual aid affords pupil demonstration, pupil participation, observation, experimentation, and incentive for further investigation.[26]

Photographs

Flat pictures are important instructional instruments. They are easily available and are economical. They can be used for extended study but should always be accurate, clear, and relevent to the unit taught. They

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[26] Ibid., pp. 87-88.

may be obtained from books, newspapers, magazines, and posters, or they may be made with a camera. The latter procedure, of course, involves more expense and more instruction.

Finch reported a scientific activity participated in by a group of second-grade children.[27] He described how they took pictures with pin-hole cameras purchased from a kodak company and developed the films. Satisfactory results were reported, and the work, correlated with regular classroom activities, brought much joy to the children.

A similar report regarding the camera as a visual aid was made by Burgert in 1938.[28] He described how the candid camera was used in certain San Diego, California, schools. The problem of the experiment was to show the activities of the school as they were carried on daily by the students. The pictures were taken at different times through the year. Typical representations of school activities were arranged effectively on a large bulletin board. In this way attention was directed to the special services of the patrol boys, the health services

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[27]Elmer A. Finch, "Second Graders Learn Photography," Journal of the National Education Association, XXVIII (January, 1939), 20-21.

[28]Robert H. Burgert, "The Candid Camera Goes to School," American School Board Journal, XCVII (1938), 47-48.

of the school nurse, productions of creative art classes, the school orchestra, library, cafeteria, and many other special phases of school life.

Hoffman reported that photography was used as a teaching aid in a certain New Jersey high school.[29] The objective of this particular activity was to emphasize a safety program in the school, and it proved very satisfactory.

Other investigations also indicate that photography can be an effective aid in teaching. However, emphasis is placed on the fact that this medium should not be used merely for entertainment but also for instruction.

Illustrations

Pictorial instruction is not new. Dent says that it is reasonably certain that a picture language was the forerunner of our modern alphabet.[30] Pictorial representations convey information. Some illustrations tell a more or less self-contained story, while others depend upon text for interpretation of their significance. The former group includes old prints, lithography, and reproductions of artists. The latter group includes such

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[29]Charles W. Hoffman, "Candid Shots on Safety," Nation's Schools, XXIII (1939), 72.

[30]Ellsworth C. Dent, The Audio-visual Handbook, p. 2.

items as chapter headings and text notes. All type of illustrations should intensify visual value and should illuminate and decorate.[31]

Maps

The reduction of the scale of areas and distances so that abstractions become meaningful is one of the main functions of maps. They also help to explain the physical nature of materials, physical forms, climatic conditions, time relationships, boundaries, historical settings and movements, communication, transportation, national and international cultural activity, and statistical information. Maps include globes, relief models, and flat reproductions. All of these visual aids should be kept clean and distinct and should be repaired or replaced when necessary.

Charts

A flat surface on which images appear, identified by color and labels, is called a chart. Often necessary data accompany the drawings. Charts are used for classification, comparison, organization, development, formation, clarification, and should be introduced at the proper time, not merely as a "fill in."

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[31]Hoban, Hoban, and Zisman, op. cit., p. 218.

Graphs

Presentation of numerical information is often made by means of the graph. This visual aid can be used effectively for summarizing, making formulas, and indicating trends.

Posters

Decoration and instruction may be gained from the use of posters. Their subjects may be physical objects, or they may deal with intangible conditions. Regardless of the subject, posters should enrich the pupils' knowledge and deepen their experience. They should not be used too promiscuously, but should meet an instructional need.

Cartoons and Comic Strips

For many years the cartoon was considered something to be looked at "for fun." Today, it is used as a tool for making subject matter vital and interesting.

Through the use of humor, fantasy, incongruity, or satire, the cartoon dramatizes a story. Its value lies in its implications rather than in its literalness.[32]

Almost all fields of learning are exploited by the authors and artists who create cartoons and comic strips.

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[32] Ibid., p. 220.

Many laws of physics, chemistry, and biology are presented and interpreted through representations. Historical events and the broad field of human relationships are effectively unfolded by the same means and methods. This fact is emphasized by statistics which show that there are over 1,200 different comic strips running in daily newspapers in the United States.[33] Tuttle made the following evaluation of the comic strips:

> In widening the curriculum to meet an ever changing world should we not recognize in the comic strip a real possible force in education, which under the wise and discriminating guidance of parents and teachers may help the child to form his moral concepts, to establish his judgments, and to increase his intelligent thinking?[34]

Excursions

The school journey is a valuable visual aid for three reasons: first, it brings the pupil into close contact with functional situations; second, it provides concreteness; and third, it is often the most economical and the most easily available technique of visual instruction.[35]

An excursion puts pupils into direct contact with

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[33]George E. Hill, "Taking the Comics Seriously," Childhood Education, May, 1941, p. 413.

[34]Florence Piper Tuttle, "The Educative Value of the Comic Strip," American Childhood, March, 1938, p. 60.

[35]Ibid., p. 29.

the situation to be studied. Such experiences as visits to the woods, crater and land formations, botanical gardens, parks, aquariums, bird sanctuaries, and other forms of nature and inexpensive visual materials are especially valuable in nature studies.[36]

The social studies curriculum may be enriched by an almost unlimited amount of audio-visual aids. History, for instance, may be made more interesting by visits to museums, fairs, or other places where historic documents, clothing, or furniture are on exhibition.

Generally, one of the concrete results of the excursion is the classroom museum. In the primary grades this type of school life is very interesting to the young child. When he assembles rocks, leaves, flowers, and other natural objects for the museum, he is keeping his school environment similar to the home environment from which he so recently has come. Through the advantage of feeling, seeing, smelling, tasting, and handling objects brought into the schoolroom, he learns easier and with more interest than if he received his knowledge from secondary sources.

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[36]W. E. Bingham, "The Environment as a Science Laboratory," Teachers College Record, XL (May, 1939), 730-732.

Bulletin Boards and Blackboards

Maberry says that eighty-seven per cent of all learning comes through the medium of the eye.[37] Such a concept places great importance on the use of bulletin boards and blackboards in classroom instruction.

Practically all classrooms in modern schools are equipped with these two visual aids. They are valuable because of the information displayed on them. They have socializing effects brought about through the opportunities for pupil activity. As visual aids, they render manifold contributions because of the large variety of subjects which may be visualized on them. They are easily seen by all of the pupils. They are economical in that they may be used many times. Since they have strong attention value, they should be neat and attractive.

Arts and Crafts

There is scarcely a field of human experience which is not enriched through contributions made by human hands. Children should not be deprived of the stimulating contact with material things that vitalize learning. Arts and crafts can give the child an objective medium for expressing ideas. They can provide a manipulative form of

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[37]Arthur L. Maberry, "Visual Education in Texas," Texas Outlook, October, 1946, p. 58.

creative leisure-time expression. They can acquaint pupils with various construction materials, and at the same time, develop the ability to use common tools and materials.[38]

Many types of arts and crafts have been used successfully by many classroom teachers. The following list represents those that have been used most widely and successfully as visual aids in the writer's experience: block printing, toys and models, book and paper making, clay modeling, leather tooling, marionettes, metal working, pottery, soap carving, toy making, and weaving.

Children are almost always interested in marionettes. These media serve as an excellent means of stimulating interest in reading, oral expression, dramatics, music, art, and handicraft. The construction of dolls and stages provides an excellent opportunity for developing manipulative and creative expression.

Bookmaking is also a valuable manipulative visual aid. Types of books suitable for construction in school vary from the simple tied booklet of the primary children to the scrapbooks and more artistic books of the upper grades. The educational value of the activity includes not only manipulative and creative development, but also

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[38]Louis V. Newkirk, Integrated Handwork for Elementary Schools, p. 8.

opportunity for information as to the value, use, and care of books.

Paper making is not difficult. It provides an opportunity for experimentation, and often results in satisfying experiences for pupils.

Weaving is a manipulative activity that is interesting and has been adapted to practically all grades in the public schools of America. Several types of handlooms are used widely. The most commonly used ones are rug looms, knitting looms, cardboard looms, and bead looms. Yarn, rag strips, paper strips, and beads are woof materials widely used for handloom weaving.

Reed weaving is often used in studies of Indian life. Such articles as mats, baskets, and trays are frequently woven.[39]

The construction of toys and models offers an opportunity for the creation of attractive objects, and for the development of initiative. Constructive activities are valuable visual aids, because they take care of the individual differences of pupils. Kites, airplanes, boats, roller motion pictures, and simple musical instruments are often among the most popular models.

Block printing can be engaged in along with bookmaking. This activity provides opportunities for much

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[39] Ibid., p. 166.

manipulative and artistic expression and should result in giving the pupils a better understanding of printing.[40]

Soap carving requires little equipment. It is an interesting manipulative experience and serves as a fine leisure-time or craft-club activity.

Soft metals or metal work are often used in the upper grades in geography and science activities, as well as in other subject fields. Sheet copper, brass, aluminum, and lead are probably the most suitable for schoolroom experimentations.[41]

Pottery in its simple forms has rich possibilities for creative and artistic development. It often is valuable in social studies and art, but may also be used successfully in other activities.

Tooling leather is an interesting manipulative experience for boys especially. It can be used successfully in geography, arts and crafts, and vocational training.[42]

Summary

Motion pictures, radio, television, facsimile broadcasting, lantern slides, film strips, stereographs,

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[40] Ibid., p. 257.

[41] Ibid., p. 277.

[42] Ibid., p. 299.

phonographs, objects and models in museums, photographs, illustrations, maps, charts, graphs, posters, cartoons, comic strips, excursions, bulletin boards, blackboards, and arts and crafts are materials which can be used as effective visual, auditory, or audio-visual aids in the classroom. These tools should be used at the psychological moment, which is when they will clinch a fact, clarify information, present the correct initial impression, or perform some other precise, definite function. The following requirements are necessary for an effective program: resourceful teachers, teachers trained in the use of such aids, systematic planning of the curriculum in relation to these aids, teacher's knowledge of the possibilities of the audio-visual aids, and teacher's knowledge of how to apply the aids to the subject materials of the curriculum.

CHAPTER III

THE USE OF AUDITORY AND VISUAL AIDS IN EIGHTY SCHOOLS OF TEXAS DURING 1945-1946

Questionnaires were sent to one hundred school superintendents in Texas during February, 1947, for the purpose of ascertaining the approximate extent to which auditory and visual aids were being used in the schools of this state. Answers were received from twenty-nine superintendents in towns with populations from 4,000 to 5,000; from twenty-nine superintendents in towns with populations ranging from 5,000 to 10,000; and from twenty-two superintendents in towns from 10,000 to 20,000 population.

Information requested on the questionnaires concerned the following three main topics: the use of movies, the use of radio, and the use of other aids including the phonograph, charts, maps, voice recorders, pottery, arts and crafts, posters, field trips, illustrations, lantern slides, and the stereograph.

The Use of Films in Eighty Schools in Texas

Data on the questionnaires concerned such topics as the use of films in the school, ownership and size of the

projection machines, number of films shown in 1945-1946, subject fields in which films were used, film audiences, and the time and method of selecting and ordering films.

Number of schools using films. -- Data in Table 1 indicate the extent to which films, as an audio-visual aid, were used in eighty schools in Texas during 1945-1946.

TABLE 1

NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS USING AND NOT USING FILMS IN 1945-1946

Population Group	Number of Schools Using Films	Number of Schools Not Using Films	No Answers Received	Total
4,000-5,000	26	0	3	29
5,000-10,000...	28	1	0	29
10,000-20,000...	21	1	0	22
Total...	75	2	3	80

Data in Table 1 show that seventy-five schools reported the use of films as a teaching aid in 1945-1946. Twenty-six of these schools were located in cities of from 4,000 to 5,000 population; twenty-eight in cities of

5,000 to 10,000 population; and twenty-one in cities of 10,000 to 20,000 population. Two schools reported that films were not used, and three made no answer. These data lead to the conclusion that films were used by a large number of the schools under consideration, and that the size of the school apparently had no bearing on the use of films as a teaching aid.

Schools' ownership of motion-picture machines. -- Table 2 contains information on the number of schools which owned motion-picture machines in 1945-1946.

TABLE 2

NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS OWNING AND NOT OWNING MOTION-PICTURE MACHINES IN 1945-1946

Population Group	Number of Schools Owning Projector	Number of Schools Not Owning Projector	No Answer Received	Total
4,000-5,000	26	0	3	29
5,000-10,000	28	1	0	29
10,000-20,000	21	1	0	22
Total....	75	2	3	80

Data in Table 2 show that seventy-five of the eighty schools considered in the present survey owned motion-picture machines in 1945-1946. Two schools reported that they did not own machines, and three schools gave no answer. These data indicate that most of the schools owned motion-picture machines in 1945-1946.

Number of motion-picture machines owned by schools. -- Table 3 shows the number of motion-picture machines owned by the eighty schools under consideration in the present study.

TABLE 3

NUMBER OF MOTION-PICTURE MACHINES OWNED IN 1945-1946 BY SCHOOLS IN DESIGNATED POPULATION GROUPS

Population Group	Number of Machines Owned										No Answer Received	Total
	1	2	3	4	5	6	7	8	9	10		
4,000-5,000	11	10	4	0	1	1	0	0	0	0	2	29
5,000-10,000...	10	7	2	5	1	0	0	0	1	1	2	29
10,000-20,000...	3	3	2	2	3	4	3	0	1	0	1	22
Total...	24	20	8	7	5	5	3	0	2	1	5	80

Data in Table 3 show that from one to ten motion-picture machines were owned by the eighty schools during 1945-1946. In the twenty-nine schools of the 4,000-5,000 population group, eleven owned one machine; ten owned two machines; four owned three; one owned five; one owned six; one owned nine; and two made no answer.

In the twenty-nine schools of the 5,000-10,000 population group, ten schools owned one machine; seven owned two machines; two owned three; five owned four; one owned five; one owned nine; one owned ten; and two made no reply.

In the twenty-two schools of the 10,000-20,000 population group, three schools owned one machine; three owned two machines; two owned three; two owned four; three owned five; four owned six; three owned seven; one owned nine; and one did not report. An analysis of these data indicates that over half of the schools owned no more than two motion-picture machines in 1945-1946, and approximately one third owned from three to nine machines.

Size of motion-picture machines. -- Table 4 contains information on the size of the motion-picture machines used by the eighty schools during 1945-1946.

Data in Table 4 show that both 16-millimeter and

TABLE 4

SIZES OF MOTION-PICTURE MACHINES USED DURING 1945-1946 BY SCHOOLS IN DESIGNATED POPULATION GROUPS

Population Group	Sizes of Machines			No Answers Received	Total
	8 mm.	16 mm.	35 mm.		
4,000-5,000...	0	27	0	2	29
5,000-10,000..	0	27	2	0	29
10,000-20,000.	0	18	3	1	22
Total....	0	72	5	3	80

35-millimeter motion-picture machines were used in 1945-1946 by the schools investigated. Twenty-seven schools in the 4,000-5,000 population group, the same number in the 5,000-10,000 group, and eighteen in the 10,000-20,000 group reported the use of 16-millimeter machines. Two schools in the 5,000-10,000 population group and three in the 10,000-20,000 group used 35-millimeter machines. No school reported the use of an 8-millimeter machine. These data show that most of the schools surveyed used 16-millimeter machines; a few used 35-millimeter machines; and none used 8-millimeter machines.

Number of films shown. -- Information in Table 5 shows the number of films shown by the schools during 1945-1946.

TABLE 5

NUMBER OF FILMS USED DURING 1945-1946 BY SCHOOLS IN DESIGNATED POPULATION GROUPS

Number of Films	Population Groups			Total
	4,000 to 5,000	5,000 to 10,000	10,000 to 20,000	
0....	3	3	0	6
1-25...	5	1	1	7
26-50...	6	7	1	14
51-75...	1	2	2	5
76-100..	0	4	1	5
101-125..	3	1	3	7
126-150..	2	0	1	3
151-200..	1	2	2	5
201-250..	1	0	1	2
500....	0	0	1	1
No answer	7	9	9	25
Total....	29	29	22	80

Data in Table 5 show that six schools reported no films shown; twenty-five made no reply; and the remaining forty-eight showed between one and five hundred films during 1945-1946.

In the 4,000-5,000 population group, three schools showed no films; five showed between one and twenty-five films; six showed between twenty-six and fifty; one showed between fifty-one and seventy-five; three showed between 101 and 125; two showed between 126 and 150; one showed between 150 and 200; one showed between 201 and 250; and seven made no report.

In the 5,000-10,000 population group, three schools showed no films during 1945-1946; one school showed between one and twenty-five films; seven showed between twenty-six and fifty; two showed between fifty-one and seventy-five; four showed between seventy-six and 100; one showed between 101 and 125; two showed between 150 and 200; and nine made no report.

In the 10,000-20,000 population group, all schools showed some films during 1945-1946. One school showed between one and twenty-five films; one showed between twenty-six and fifty; two showed between fifty-one and seventy-five; one showed between seventy-six and 100; three showed between 101 and 125; one showed between 126

and 150; two showed between 150 and 200; one showed between 201 and 250; and one showed 500.

An analysis of the preceding data shows that a little less than one half of the forty-eight schools which reported on films showed between one and fifty films, and a little more than one half showed over 100 films during 1945-1946. Only one school showed as many as 500 films.

Subject fields in which films were used. -- Table 6 contains data on the various subject fields or areas in which films were shown in 1945-1946 by the eighty schools under consideration.

Data in Table 6 show that films were shown in the following thirteen subject fields: Bible, English, football, geography, health, history, homemaking, library, music, safety, science, social science, and vocational agriculture. A number of answers to the questionnaire dealing with this phase of the problem were "all" or "various," and were disregarded in the analysis of the data.

In the 4,000-5,000 population group, eleven schools showed films in English, five in history, two in homemaking, one in each of the following fields: Bible, health, music, and safety; and none in football, library, science, social science, and vocational agriculture.

TABLE 6

SUBJECT FIELDS IN WHICH FILMS WERE SHOWN IN 1945-1946 BY EIGHTY SCHOOLS IN DESIGNATED POPULATION GROUPS

Subject Fields	Number of Schools in Population Groups Showing Films		
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population
All.....	13	18	8
Bible.....	1	0	0
English.....	11	1	1
Football.....	0	1	1
Geography.....	0	2	1
Health.....	1	3	4
History.....	5	2	0
Homemaking.....	2	1	2
Library.....	0	0	1
Music.....	1	1	0
Safety.....	1	0	1
Science.....	0	16	8
Social science.	0	5	7
Various fields.	3	0	5
Vocational agriculture..	0	3	1
No fields specified....	3	2	0

In the 5,000-10,000 population group, sixteen schools showed films in science; five in social science; three in both health and vocational agriculture; two in both geography and history; one in each of the following fields: English, homemaking, and music; and none in Bible, football, library, and safety.

In the 10,000-20,000 population group, eight schools showed films in science; seven in social science; four in health; two in homemaking, one in each of the following fields: English, football, geography, library, safety, and vocational agriculture; and none in Bible, history, or music.

A summary of the data in Table 6 indicates that films were shown by more schools in English and in science than in any other subject fields. An analysis of the information shows that schools in the smaller population groups showed more films in English than in any other area, while schools in the larger population groups showed more films in science than in any other subject field. Films in Bible, football, library, music, and safety were shown by not more than one school in any single population group.

Sizes of audiences seeing films. -- Table 7 contains information on whether films were shown to class groups,

to auditorium groups, or to both groups.

Data in Table 7 show that most of the schools surveyed showed films to both classroom and auditorium audiences in 1945-1946. No schools showed films to auditorium groups only, and only ten showed to classroom groups only.

TABLE 7

SIZE OF GROUPS WHO WERE SHOWN FILMS DURING 1945-1946 IN EIGHTY SCHOOLS OF DESIGNATED POPULATION GROUPS

Size of Group	Number of Schools Showing Films to Audiences			Total
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population	
Auditorium only...	0	0	0	0
Class only...	4	2	4	10
Both groups.	23	25	17	65
No size specified...	2	2	1	5
Total	29	29	22	80

Methods of obtaining films. -- Table 8 contains data on the methods used by eighty schools for obtaining films during 1945-1946.

TABLE 8

METHODS USED FOR OBTAINING FILMS IN 1945-1946 BY EIGHTY SCHOOLS IN DESIGNATED POPULATION GROUPS

Methods	Number of Schools in Each Population Group Using Each Method			Total
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population	
Bought all films.....	0	0	0	0
Rented films	23	20	14	57
Bought and rented....	4	5	5	14
Used loan films.....	0	4	2	6
No method specified.	2	0	1	3
Total...	29	29	22	80

Data in Table 8 show that most of the schools under consideration rented films, and none bought all films used during 1945-1946. In the 4,000-5,000 population

group, no school bought all of its films; twenty-three rented films; four bought some and rented others; no school used loan films; and two made no reply as to the method of obtaining films.

In the 5,000-10,000 population group, no school bought all of its films; twenty rented films; five bought and rented; and four used loan films.

In the 10,000-20,000 population group, no school bought all of its films; fourteen rented films; five bought and rented; two used loan films; and one made no reply.

Who selected films and the factors determining selection. -- Table 9 contains information on the person, group, or other source that determined what films were to be shown in the schools under consideration during 1945-1946.

Data in Table 9 show that the teachers selected the films shown in 1945-1946 by a majority of the schools considered in the present study. In the 4,000-5,000 population group, films were selected by teachers in twelve schools; by a subject-matter committee in four schools; by the film catalogue in two schools; by the department head in one school; by the administration in one school; and by the "needs of material studied" in one.

TABLE 9

PERSONS OR FACTORS WHICH DETERMINED FILMS WHICH WERE SHOWN DURING 1945-1946 IN EIGHTY SCHOOLS IN DESIGNATED POPULATION GROUPS

Person or Factor	Number of Schools Reporting Persons or Factors			Total
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population	
Department head.....	1	0	1	2
School administration.....	1	0	0	1
Film catalogue.....	2	2	1	5
Materials studied...	1	1	0	2
Subject-matter committee.....	4	1	4	9
Teachers....	12	20	13	45
No source specified.	8	5	3	16
Total...	29	29	22	80

No source was specified by eight schools.

In the 5,000-10,000 population group, films were selected by teachers in twenty schools; by film catalogue

in two; by "needs of material studied" in one; and by subject-matter committee in one. No response on the question was received from five schools.

In the 10,000-20,000 population group, films were selected by teachers in thirteen schools; by a subject-matter committee in four; by the department head in one school; and from catalogues in one school. No reply to this question was received from two schools.

Dates for ordering films. -- Table 10 contains data on the time when films were ordered by eighty schools considered in the present survey.

Data in Table 10 indicate that almost half of the schools under consideration ordered some films at the beginning of the school year and ordered others as the teachers requested them. In the 4,000-5,000 population group, both times for ordering films were reported by fifteen schools; at the beginning of school was reported by five schools; and at teachers' request was reported by seven. No date was given by two schools.

In the 5,000-10,000 population group, at the beginning of the school year and at teachers' request were both specified as dates for ordering films by fourteen schools; at the beginning of school and at teachers' request were reported by seven schools each. One school made no reply.

TABLE 10

DATES WHEN FILMS WERE ORDERED DURING 1945-1946 BY EIGHTY SCHOOLS IN DESIGNATED POPULATION GROUPS

Dates	Number of Schools in Designated Population Groups Using Dates			Total
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population	
At beginning of school.	5	7	6	18
At teachers' request...	7	7	6	20
Both preceding dates.	15	14	9	38
No date specified.	2	1	1	4
Total...	29	29	22	80

In the 10,000-20,000 population group, nine schools reported that they ordered some films at the beginning of the school year and ordered others as teachers sent in requisitions. Six schools ordered at the beginning of school; six ordered when teachers requested films; and one school made no reply.

Film Strips

Film strips are reportedly used as teaching tools by many teachers. For the present study, questionnaires regarding audio-visual aids' use in the school contained this question: "Does your school use 8 mm. film strips?" Table 11 contains a compilation of the answers.

TABLE 11

THE NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS WHICH USED AND DID NOT USE FILM STRIPS DURING 1945-1946

Population Group	Number of Schools Using or Not Using Film Strips			Total
	Yes	No	No Reply	
4,000-5,000.....	4	22	3	29
5,000-10,000....	8	19	2	29
10,000-20,000...	5	14	3	22
Total.....	17	55	8	80

Data in Table 11 show that fifty-schools, among the eighty surveyed, did not use film strips during 1945-1946; seventeen did use them. In the 4,000-5,000 population group, four schools used film strips; twenty-two did not use them; and three schools made no answer. In the

5,000-10,000 population group, eight schools used film strips; nineteen did not use them; and two schools did not reply. In the 10,000-20,000 population group, five schools used film strips; fourteen did not use them; and three schools failed to report on the question.

Projectors and Slides

Sizes of projectors used. -- In order to get a more complete picture of the status of visual aids in eighty representative schools of Texas, the writer asked for information as to the size of the projectors used for slides. Table 12 contains the data received.

Data in Table 12 show that fifty-three schools did not send the required information regarding projectors. This indicates that clarity was lacking in the questionnaire regarding the question: "What size projector do you use for slides?" On many of the questionnaires such answers as "2 x 2," "4 x 4," and similar figures appeared. The writer concluded that these answered items referred to the size of the slides and not to the size of the projector. As a result, little information was received relative to the sizes of projectors used.

An analysis of information supplied by the twenty-seven schools which answered the questionnaires regarding the size of the projectors shows that fifteen schools, or

TABLE 12

SIZE OF PROJECTORS USED FOR SLIDES BY EIGHTY SCHOOLS IN DESIGNATED POPULATION GROUPS DURING 1945-1946

Sizes	Number of Schools in Designated Population Groups Reporting Sizes of Projectors			Total
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population	
8 mm.....	1	1	0	2
16 mm.....	2	2	1	5
35 mm.....	5	3	7	15
Opaque.....	1	2	0	3
Standard....	2	0	0	2
No size specified.	18	21	14	53
Total...	29	29	22	80

almost half of the number reporting, used 35-mm. projectors during 1945-1946. Two schools used 8-mm. projectors; five used 16-mm. projectors; and two reported "standard" projectors.

Making of slides. -- The writer asked the superintendents who cooperated in the study whether their pupils and teachers made slides. Table 13 contains a compilation of the answers.

TABLE 13

THE NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS WHICH MADE AND DID NOT MAKE SLIDES DURING 1945-1946

Population Group	Number of Schools Reporting			Total
	Yes	No	No Reply	
4,000-5,000.....	7	19	3	29
5,000-10,000....	10	15	4	29
10,000-20,000...	6	13	3	22
Total.....	23	47	10	80

Data in Table 13 show that over half of the schools under consideration did not make slides during 1945-1946. Among the eighty schools, twenty-three made slides; forty-seven did not make slides; and ten failed to send a report.

In the 4,000-5,000 population group, seven schools did make slides; nineteen did not; and three made no reply. In the 5,000-10,000 population group, ten schools made slides; fifteen did not; and four made no report. In the 10,000-20,000 population group, six schools made slides; thirteen did not; and two schools sent no information regarding the question.

The Stereopticon

The questionnaire sent out to superintendents who made the present study possible contained this question: "Does your school have a stereopticon?" Table 14 contains the information received in answer to this question.

TABLE 14

THE NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS WHICH HAD AND DID NOT HAVE A STEREOPTICON DURING 1945-1946

Population Group	Number of Schools Reporting			Total
	Yes	No	No Reply	
4,000-5,000....	11	14	4	29
5,000-10,000...	13	15	1	29
10,000-20,000..	14	6	2	22
Total.....	38	35	7	80

Data in Table 14 show that thirty-eight superintendents reported the use of the stereopticon as a teaching aid during 1945-1946; thirty-seven answered negatively; and seven made no reply.

In the 4,000-5,000 population group, eleven schools

reported the use of a stereopticon; fourteen reported no stereopticon; and four made no reply. In the 5,000-10,000 population group, thirteen of the twenty-nine schools reported the use of the stereopticon; fifteen reported negatively; and one made no reply. In the 10,000-20,000 population group, fourteen of the twenty-two schools had a stereopticon during 1945-1946; six did not use this type of visual aid; and two made no reply.

An analysis of preceding data indicates that slightly less than one half of the schools considered in the present study used the stereopticon as a teaching aid during 1945-1946. More schools in the larger population groups than in the smaller groups reported the use of this teaching device.

Slides for the Stereoscope

Table 15 contains information on the number of schools which reported that a library of slides was in use during 1945-1946.

Data in Table 15 show that sixteen schools reported a library of slides for the stereoscope during 1945-1946; twenty-four reported negatively; and forty made no reply. The latter indicates that the question was not clear to the superintendents, or that they were not familiar with this particular visual aid, or that they considered the

TABLE 15

THE NUMBER OF SCHOOLS IN DESIGNATED POPULATION GROUPS WHICH HAD AND DID NOT HAVE A LIBRARY OF SLIDES FOR THE STEREOSCOPE DURING 1945-1946

Population Group	Number of Schools Reporting			Total
	Yes	No	No Reply	
4,000-5,000....	4	10	15	29
5,000-10,000...	7	7	15	29
10,000-20,000..	5	7	10	22
Total.....	16	24	40	80

requested information to be insignificant.

An analysis of the replies received shows that in the 4,000-5,000 population group, four schools reported a library of slides; ten reported no library; and fifteen made no reply.

In the 5,000-10,000 population group, seven schools used a library of slides; seven did not; and fifteen failed to answer the question.

In the 10,000-20,000 population group, five schools had a slide library; seven had none; and ten made no reply.

An analysis of the data in Table 15 indicates that only a small number of the schools under consideration reported the presence of a library of slides for the stereoscope in 1945-1946. More medium-sized schools than other sizes reported the use of this particular type of visual aid.

Radio as a Teaching Aid

The questionnaire used in the present study contained the following questions regarding the use of the radio as a teaching device: "(1) Do you have a radio in each classroom? (2) Is the school radio used only in special group meetings? (3) Do you have a public address system?" Table 16 contains a compilation of the answers received in reply to the preceding questions.

Data in Table 16 show that sixty schools, among the eighty considered in this study, reported that the radio was used as a teaching device during 1945-1946. Sixteen schools had a radio in each classroom. Thirty-seven schools used the school radio only in special group meetings. Fifty-one schools reported a public address system.

More schools in the small population group than in the other groups reported that they had a radio in each classroom. Little difference was noted in the answers to the other questions as far as the size of the population

TABLE 16

USE OF THE RADIO AS A TEACHING DEVICE DURING 1945-1946 IN SCHOOLS OF DESIGNATED POPULATION GROUPS

Information on the Use of the Radio	Number of Schools Reporting								
	4,000-5,000 Population			5,000-10,000 Population			10,000-20,000 Population		
	Yes	No	No Reply	Yes	No	No Reply	Yes	No	No Reply
Does your school use radio as a teaching aid?.	20	7	7	23	4	2	17	3	2
Do you have a radio in each classroom?....	10	17	2	2	26	1	4	16	2
Is the school radio used only in special group meetings?.....	15	5	9	13	10	6	9	7	6
Do you have a public address system?.....	17	9	3	18	11	0	16	5	1

group was concerned.

An analysis of data in Table 16 indicates that the radio was used as a teaching aid by a large number of schools in all three population groups during 1945-1946. Less than half of the schools had a radio in each class-

room. Almost half of the schools used the school radio only in special group meetings, and approximately three fourths of them reported a public address system.

Other Types of Auditory and Visual Aids Used in 1945-1946

Table 17 contains information on the types of audio-visual aids, not including motion pictures, radio, the stereopticon, stereoscope, slides, and film strips, which were used during 1945-1946 by the eighty schools which co-operated in the present study.

Data in Table 17 show that almost all of the schools in all three of the population groups used the phonograph, charts, and maps as teaching devices during 1945-1946. Voice recorders were used by slightly less than half of the eighty schools considered in the study. Arts and crafts were used by practically all of the schools in the medium and large population groups, but by less than half of the small schools. Puppets were used by one fourth of the eighty schools.

An analysis of data in Table 17 indicates that the phonograph, charts, maps, and arts and crafts were used by more schools than any of the other specified aids, and puppets were used by fewer schools.

Aids not listed on the questionnaire, but reported

TABLE 17

TYPES OF AUDITORY AND VISUAL AIDS USED DURING 1945-1946 BY SCHOOLS IN THE DESIGNATED POPULATION GROUPS

Auditory and Visual Aids	Number of Schools Reporting		
	4,000-5,000 Population	5,000-10,000 Population	10,000-20,000 Population
Phonographs....	27	25	20
Charts.....	25	27	21
Maps.....	26	28	21
Voice recorders	13	9	14
Puppets.....	2	11	7
Arts and crafts	10	20	21
Others.....		Laboratory Posters Bioscope Pictures	

as being used by at least one school, included posters, pictures, laboratory equipment, and the bioscope.

Summary

The writer sent questionnaires to one hundred school superintendents of Texas and asked that they send the requested information regarding the use of audio-visual aids in their schools during 1945-1946.

Answers were received from twenty-nine superintendents of schools in towns of from 4,000 to 5,000 population; from twenty-nine in small cities of from 5,000 to 10,000 population; and from twenty-two in larger cities of from 10,000 to 20,000 population.

Seventy-five schools reported the use of films as teaching aids, and seventy-five schools owned their own motion-picture machines. The number of machines owned varied from one to ten. The largest number owned was reported by a medium-sized school. Both 16-millimeter and 35-millimeter machines were used, but only the medium-sized schools and the large schools reported the use of a 35-millimeter machine.

A little less than one half of the schools which reported on the number of films used showed between one and fifty films used during 1945-1946, and a little more than one half showed over one hundred films used. The use of films in English and science was reported by more schools than was reported for any other subject area. Most schools showed films to both classroom and auditorium groups. A large number of the films were selected by teachers and were rented either at the beginning of the school year or when the teachers made a requisition.

Film strips were not used by approximately three fourths of the schools. Over half of the group did not make slides for use as visual aids.

Slightly less than half of the schools reported the use of a stereopticon during 1945-1946. Only a small number reported a library of slides for the stereoscope.

Radio was used as a teaching aid in three fourths of the schools under consideration. Less than half of the group had a radio in each classroom, and approximately three fourths of the eighty schools reported public address systems.

The phonograph, charts, and maps were other auditory and visual aids reported as used by practically all of the schools during 1945-1946. Voice recorders were used by slightly less than one half of the group. Arts and crafts were used by practically all of the medium-sized and large schools, but they were used by less than half of the small schools.

Puppets were used by approximately one fourth of the eighty schools which reported. Posters, pictures, laboratory equipment, and the bioscope were each reported as used by one school.

CHAPTER IV

SUMMARY, FINDINGS, AND CONCLUSIONS

Summary

The problem of the present study was two-fold; first, to obtain data on auditory and visual aids that are recommended as teaching devices; and second, to determine to what apparent extent these aids were used in eighty representative schools in Texas during 1945-1946.

Secondary sources, such as books, periodicals, and pamphlets, provided information for the first part of the study. Primary sources, including eighty public school superintendents, furnished data for the second part of the investigation. Questionnaires regarding the use of auditory and visual aids in the schools during 1945-1946 were sent to one hundred superintendents. Twenty-nine were located in small towns of 4,000 to 5,000 population; forty-four in towns of 5,000 to 10,000 population; and twenty-eight in larger towns of from 10,000 to 20,000 population.

Questionnaires were sent to the superintendents in the following towns or school communities of 4,000-5,000 population: Arlington, Athens, Ballinger, Bowie,

Eastland, El Campo, Gonzales, Hillsboro, Luling, Monahans, Olney, Pasedena, Pharr, Polytechnic (Fort Worth), Ranger, Raymondville, Refugio, Snyder, Stamford, Stephenville, Wharton, Yoakum, Quannah, Marfa, Memphis, Conroe, Alpine, Belton, and Fredericksburg.

Questionnaires were sent to superintendents in the following towns of from 5,000 to 10,000 population: Alice, Bay City, Beeville, Brady, Brennam, Cameron, Childress, Coleman, Colorado, Cuero, Dalhart, Eagle Pass, Edinburg, Electra, Ennis, Graham, Henderson, Hidalgo, Huntsville, Kerrville, Kilgore, Kingsville, Lamesa, Lockhart, Marlin, Mercedes, Mexia, Mission, Navasota, Orange, Pecos, Robstown, Rusk, San Benito, Seguin, Sulphur Springs, Taylor, Texas City, Thurber, Uvalde, Waxahachie, Weatherford, and Weslaco.

Questionnaires were sent to superintendents in the following towns of the 10,000-20,000 population group: Big Spring, Borger, Brownwood, Bryan, Cleburne, Corsicana, Del Rio, Denison, Denton, Gainesville, Greenville, Harlingen, Longview, Lufkin, McAllen, McKinney, Marshall, Midland, Palestine, Pampa, Plainview, Sherman, Temple, Terrell, Texarkana, Vernon, Victoria, and Odessa.

An investigation of secondary sources revealed that the following instructional tools were recommended as valuable auditory and visual aids by authorities in the

teaching profession: motion pictures, radio, slides, film strips, stereopticon, stereoscope, phonograph, objects and models, photographs, illustrations, maps, charts, graphs, posters, cartoons, comic strips, excursions, bulletin and blackboards, puppets, and arts and crafts. Television and facsimile broadcasting were pronounced as potential teaching aids and were expected by some writers to be found in most classrooms in the future.

Findings

An analysis of data obtained from questionnaires answered by eighty school superintendents of Texas resulted in the following findings:

1. Seventy-five schools used motion pictures as teaching aids during 1945-1946. The size of the school apparently had no bearing on the use of films as a teaching aid, since approximately the same percentage of small, medium-sized, and large high schools used them.

2. Seventy-five schools owned motion-picture machines in 1945-1946. Again the size of the schools showed no relation to the owning of machines.

3. Over half of the schools owned no more than two motion-picture machines, and approximately one third owned from three to nine machines. The large high schools

owned more machines than did the small and the medium-sized schools.

4. Seventy-two schools owned 16-millimeter motion-picture machines, and five owned 35-millimeter machines. None used 8-millimeter machines. Only medium-sized and large schools reported the use of 35-millimeter machines.

5. Six schools showed no films during 1945-1946. A little less than half of the forty-eight schools which reported on films showed no more than fifty films, and slightly lmore than half showed over one hundred films.

6. Films were shown in the following thirteen subject areas: Bible, English, football, geography, health, history, homemaking, library, music, safety, science, social science, and vocational agriculture.

7. More schools showed films in English and in science than in any other subject fields.

8. Practically all of the schools showed films both to classroom and to auditorium audiences.

9. Most of the schools rented films, but a few reported that some films were bought.

10. Teachers selected the films used in forty-five schools. Films were selected by departmental heads, school administrators, and subject-matter committees or selected from film catalogues, or "determined by the type of material studied."

11. Almost half of the schools ordered some films at the beginning of school. Others ordered at the teachers' request.

12. Fifty-five schools did not use film strips during 1945-1946. The largest number reporting the use of this particular teaching device was among medium-sized schools.

13. Few schools reported on the size of their slide projector, but almost half of those which did report used a 35-millimeter projector.

14. Twenty-three schools reported that they made some of their slides in 1945-1946.

15. Thirty-eight schools used stereopticons during 1945-1946. More large schools than other sizes reported the use of this aid.

16. Sixteen schools had a library of slides.

17. Sixty schools used radio as a teaching aid.

18. Sixteen schools had a radio in each classroom. More small schools than other sizes made this report.

19. Thirty-seven schools used the school radio only in special group meetings.

20. Fifty-one schools had a public address system.

21. In addition to motion pictures, radio, stereopticon, stereoscope, slides, and film strips, the following other aids were reported as being used by at least

some schools during 1945-1946: phonographs, charts, maps, voice recorders, puppets, arts and crafts, laboratory equipment, posters, pictures, and the bioscope. The phonograph, charts, maps, and arts and crafts were reported by more schools than were the other specified aids, and the puppets were used by fewer schools.

Conclusions

The following conclusions were reached as the result of analyzing available data on the present problem:

1. Motion pictures were used widely as a teaching aid during 1945-1946.

2. Motion-picture machines were owned by a large number of the schools.

3. Both 16-millimeter and 35-millimeter machines were used and owned by the schools, but the 16-millimeter machine was most prevalent.

4. Slightly less than half of the schools showed from one to fifty films during the school year; and a few more than half showed over one hundred.

5. More schools showed films in English and science than in any other subject-matter fields.

6. Both classroom and auditorium audiences saw films in most schools.

7. Teachers selected the films used in most schools.

8. Most schools rented films.

9. Films generally were ordered at the beginning of school and when teachers made requisitions.

10. Film strips were used as a teaching aid by few schools during 1945-1946.

11. For slides, 35-millimeter projectors were used more frequently than other sizes.

12. Few schools made any of their own slides during 1945-1946.

13. Approximately half of the schools used the stereopticon.

14. Few schools provided a library of slides for stereoscopes.

15. Radio was used as a teaching aid in a large number of schools.

16. Only a small number of schools had a radio in each classroom.

17. Many schools had a public address system in 1945-1946.

18. The phonograph, charts, and maps were used by practically all of the schools.

19. Arts and crafts were used by most of the medium-sized and large schools but by less than half of the small schools.

20. Puppets were not used widely as visual aid material in 1945-1946.

APPENDIX

QUESTIONNAIRE REGARDING AUDIO-VISUAL AIDS IN YOUR SCHOOL DURING 1946

1. Name of school_____ Enrollment_____

2. Does your school use movies as teaching aids?_____

   (a) Does school own machine?_____
   (b) How many machines owned?_____
   (c) What size machine?_____
   (d) How many films did your school show from Sept. 1945 until June, 1946?_____
      (1) What subject fields are films shown IN?
      _____
      (2) Are films shown in class-sized group?_____
      Auditorium group?_____
   (e) How do you secure films: rent, buy, etc._____
   (f) How do you determine what films to use?_____
   (g) When do you make out your order for films?
      (1) At beginning of year_____
      (2) As teachers request them_____

3. Does your school use an 8 mm film strip?_____

4. What size projector do you use for slides?_____
   (a) Does your school make any slides?_____

5. Does your school have a stereopticon?_____
   (a) Do you have a library of slides for stereoscope?_____

6. Which of the following audio-visual aids do your teachers use?
   (a) Phonographs_____
   (b) Charts_____
   (c) Maps_____
   (d) Voice recorders_____
   (e) Puppets_____

(f) Pottery_____
(g) Arts, such as basket weaving_____
(h) List others_____

7. Does your school use radio as a teaching aid?_____

(a) Do you have radios in each classroom?_____
(b) Is the school radio used only in special group meetings?_____
(c) Do you have a public address system?_____

Signed_____

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